AMERICAN BEE JOURNAL

Vol. LXVI—No. 1 Hamilton, Illinois, January, 1926 Monthly, $1.50 a Year

"If You Were to Begin Over Again"

By J. E. Crane.

IF you were to begin keeping bees again, how would you commence? If all your equipment were destroyed by fire or you were to move to a new part of the country and commence beekeeping again, how would you start in? What kind of hives would you use? Would you use a Jumbo frame or a standard Langstroth, or a shallow frame and a sectional hive? Would you plan to extract your surplus or secure it in sections?

Surely with the experience of many years you could tell a beginner just how to start in the best way and so avoid any mistakes that one who has had many years of experience may have made, and who is still using equipment not the best because of the expense of throwing it all away and buying new. There are so many things advertised, so many systems of management advised, that a beginner is puzzled to know which to choose.

Alas! How many people there are in the world who want others to do their thinking for them and who are content to blindly follow their lead!

I once asked a beekeeper why he used frame hives. After some hesitation he said it was because other beekeepers who were successful in keeping bees used them. It did not matter with him whether the combs were built straight on the frames or crosswise, for he never handled them and knew absolutely nothing of their value. Mr. Alexander quite contrary to the almost universal opinion, proved that he could get more honey by dividing his colonies early in the season than later. He was right, but it did not follow that the same rule would work as well elsewhere.

Doolittle told us many years ago that the best time and way to get frames of foundation drawn out was by placing them over the brood chamber after removing the supers. I tried it and it was a complete failure. What was the trouble? Doolittle had a light flow from buckwheat, teasel, or some other source which kept his bees building comb and storing honey, while I had none, which spelled success in his case and failure in mine.

J. E. CRANE

We trust our young readers will read and study Mr. Crane's article, for he tells of experiences that many old beekeepers have encountered. Mr. Alexander, whom he quotes as recommending the dividing of colonies early, had a locality in which it was expedient to do this, for his crop came late and heavy. By increasing his colonies early, he had just that many more bees to harvest the late crop. That is also why he could keep hundreds of colonies in one spot when beekeepers in different locations found this unprofitable. Most of our knowledge comes by dear experience.—Editor.

And so, while it might be a pleasure for a beekeeper of large experience to give advice, it would seem to be somewhat doubtful as to its value, except in a very general way. Conditions in a country as large as ours, vary greatly, and sometimes within a short distance the conditions may be so different that methods best adapted to one place will be far from best in another.

If we look at the various professions or kinds of business men are engaged in we shall find all sorts of success or failure without much regard to the way they started in. Some start in the most unpromising way and meet with wonderful success. We are reminded of Abraham Lincoln, or the President of Germany, who has recently passed away, as notable examples. Others with greater advantages to start have been conspicuous failures.

I have been more and more surprised to learn as the years go by, how few people really think for themselves, and think hard. One man is a Republican, and another a Democrat, for the most part because their fathers or friends are, rather than because they have thought the subject out for themselves. If we ask five persons how well our prohibitory law is being enforced I suppose two out of five would say there was just as much liquor sold as ever; while if they were to add to the amount that the United States released for legitimate purposes, all that is shipped from Europe for bootleg trade it would not amount to one gallon in fifty or one hundred consumed in former days.

Scratch their heads as they will, it is still easier for the majority of people to take what others say rather than to think for themselves.

So I would say to the young beekeeper: Learn all you can about the business, learn from books. It is wonderful how much information they contain. Learn all you can from other beekeepers. They can help

you. Above all, study well the bees. It will surprise you to see how many questions they can answer. They can tell you better than I can whether it is more profitable to produce comb or extracted honey. They can tell you the value of comb foundation. They can tell you better than anyone else whether to winter in a cellar or in double-wall hives. They will not hesitate to tell you which is better, a large or a small brood chamber. They will tell you what will stimulate or retard swarming. Don't be bashful in asking them all sorts of questions.

Use your own judgment in managing your business. Unless you are more fortunate than most successful beekeepers, you will make some mistakes, but it is far better that you should make them than to depend altogether on what others tell you.

This is a strange but most interesting and really very wonderful world in which we live. Mankind, the highest of created beings, has to learn to walk by falling many times; has to learn to talk by making many blunders; learns to read by calling many words wrong; learns to spell, if he ever does, by making many mistakes.

We learn right from wrong by many early lapses from the right path. And so we must gain strength by struggle all the way through life. I don't believe the good Lord expects us to reach perfection, but He does expect us to keep climbing.

Protection of Hives—Fall, Winter and Spring

By C. P. Dadant.

THE ideal protection for colonies, in countries where the changes of temperature pass, in a few hours, from a comfortable flying weather, with the thermometer above 50 degrees in the shade, to 20 or lower below zero, is a shelter in which the bees may keep the temperature of the nest above 50, while able to take flight on any warm day.

The fact that, in northern Canada, in Quebec, Montreal, Ottawa, bees live and thrive out-of-doors, when they are confined to the hive for three months or more in succession, shows us that it is possible to pack them so that they will not need any flights for several months, if they have good healthy food, which is even more important than packing.

In our milder regions, such as central Illinois, where flight is possible once a month, or even oftener, protection is not so indispensable. However, it is always better than exposure. Wind exposure is very objectionable. We may know this by our own bodies. At the same temperature, a man exposed to the wind will suffer much more than one who is sheltered from it.

For that reason, experienced beekeepers, of the chilly north, take great pains to establish windbreaks. Mr. Tissot, the successful Ottawa apiarist mentioned in the Journal for January, not only packs his hives in a double-walled case, but erects a tight board fence all around his apiary. The snow falls and covers the hives, to such an extent that they are often hidden entirely, but need no attention till the spring thaw. The warmth of the bees melts tunnels under the snow.

In our warmer regions such a method of management would not do, because we have warm days, when the temperature is high enough to melt away the snow and heat the hives. If they are confined, the bees become restless and worry

Thus the methods of packing must depend upon the locality and its temperature and we cannot draw a straight rule. But the packing which keeps the colonies warm and yet permits their bees to fly whenever the weather is suitable is the best.

Much has been said and written concerning moisture absorbents over the cluster. Some apiarists, seeing that bees, in a state of nature, thoroughly close all issues but their entrance with air-tight propolis, have concluded that no moisture absorbents were necessary. Yet, we have seen winters when colonies that were well protected suffered a great deal from the moisture that escaped from their bodies, until in fact they were soaked in it. We had oilcloths for cover over the brood frames. Some of these oilcloths had been gnawed to pieces by the bees. Wherever the defects in those cloths permitted the moisture from the bees to escape into the forest leaves placed in the cap, over the cluster, the bees remained dry and healthy; but wherever the cloths were sound and air-proof, so that no moisture could escape, the bees suffered immensely.

As a matter of course, a difficulty of this kind does not present itself very often. Usually the moisture produced by the bees becomes condensed and runs out at the entrance. But it is in the very worst seasons that this trouble appears. We recall most especially the winter of 1884-5, during which the bees were confined a long time and the winds were very fierce. In spite of hives with double walls and a lining of 3 inches of sawdust, between these walls, many colonies actually died, soaked in the moisture produced by the evaporation of their breath, which became condensed above the cluster, much as a man's breath condenses on his whiskers in a cold day.

When we recommend absorbents for the moisture produced, we do not recommend a draft of air, upwards, however. A current of air would chill the cluster. What we want is a blanket acting just as a warm woolen cover acts upon our bed in a cold night, allowing the moisture to pass from our bodies without any deperdition of heat.

In fall, winter or spring, the bees need protection, although they may very well pull through, even in a cold winter, with only the shelter produced by the walls of their hive. I remember seeing a colony in an eight-frame Langstroth hive, on the coldest corner behind some of the buildings of the apiary department at the Agricultural College of Minnesota. I enquired as to the reason of this location of the one hive. Professor Jager, the apiarist, replied that he was simply trying how much a colony of bees could stand. He had had that colony there for 3 years, I believe, and had not yet been able to kill them by this willful neglect. This feat is possible, even in very cold winters, when a colony is very strong in bees and has excellent food. I would not recommend it to any beekeeper who is desirous of success.

Very strong colonies can stand a great deal of bad weather. I remember having had a colony that was so full of healthy bees that it was impossible to give the least disturbance in its vicinity without causing some of its bees to come to the entrance and show fight, even when the weather was so cold that they would be chilled at once if they left the hive.

I have often heard beekeepers deplore the fact that bees on a warm day, in snow time, would take flight and get lost. My experience is that it is better for the beekeeper to lose a few bees than to confine them against their will. On such days we scatter straw, ashes, sawdust, or anything convenient, on the snow, in front of the hives, so that they may be able to arise and return.

A Manitoba Honey Crop

One of my colonies gathered 25 pounds of honey on July 31st, last, with a total surplus of 496½ pounds for the season. The swarm taken from the above colony on June 9th, gave a surplus of over 150 pounds. That's Manitoba.

Wm. D. Wright.

In No Man's Land

If you have ever used alcohol-formalin on combs you will appreciate the comfort of the gas mask in the above picture. Noah Williamson and Engle, of Sioux City, Iowa, are to blame for sending this, and although the photographer was a good one, brought out from the city, the picture is still somewhat hazy. Perhaps the eye of the camera is also disturbed by the fumes of the formalin.

The man behind the mask is Williamson. Last year, with a home-made solution of formalin, soap and water, he treated several hundred combs, which so far have not shown any second appearance of disease, after being in use by the bees. He says he is entirely satisfied with the results.

The equipment he uses is simpler, but is in general about the same as that described on page 327 in our July number.

The Avocado for Bees

On page 487 of the October Journal, Roy K. Bishop, of California concludes that the avocado is never of much importance as a source of nectar. When the writer visited Mr. Bishop in March of 1925 the avocado was in bloom and the bees were working it in rather a half-hearted manner as he describes. However, it is quite possible that, under other climatic conditions or in a situation where large areas of the blooms were within reach, its value might be more apparent.

In the report of the Avocado Growers' Association for 1922,23 is an extended paper by Orange L. Clark, of Point Loma, Calif., giving the results of his experiments with bees in the pollination of the blossoms of avocado. From this paper I quote as follows:

"During the last blooming season there were 17 hives of bees in the orchard. Because of drought here, as elsewhere in Southern California, there was less outside bee pasture than usual and bees worked much more abundantly on avocado blossoms here than during any previous season, and produced an abundant honey harvest. . . . There seems to be no question that the heavy crop which has set on much of the orchard is closely related to the amount of bee work on the blossoms.

"Frequently bees do not work as freely on avocado as on most other fruit blossoms. They often prefer other bee pasture to the avocado orchard. When bees are abundant or other bee pasture is scarce they work more freely on avocado. . . . . Close watching showed that bees have a strong preference for sticking to one avocado tree at a time. For these reasons it is not easy to obtain the maximum of cross pollination of avocados studied as it is of other fruits. . . . .Very few insects except bees frequent the avocado flowers.

"Half of one small young Dickinson tree was covered, but with no bees under the netting. On the half of the tree outside the netting great numbers of small fruits set, six of which are growing well and evidently most of these will mature, which is a heavy crop for the half of a tree of its size and age. Inside the netting, where there were no bees, only three small fruits set and those fell before they reached the size of peas."

With reference to honey from avocado Mr. T. Ralph Robinson, of the Bureau of Plant Industry, in a private letter to the writer, states as follows:

"This spring, when I was at Homestead (Florida), I was served with honey said to be made from avocado bloom, and where avocado orchards are numerous as at Homestead, there is doubtless an opportunity for producing considerable honey. Each avocado flower secretes nectar on both first and second opening from a different set of nectaries on each day."—F. C. P.

A Good Moving Device

The picture shows a very practical moving device in use by Frank Maag, of Orange, California. Angle iron with slots at each end to catch the heads of large screws is used. Where the bottoms and moving screens are nailed directly to the hive or fastened with wood strips there is more or less damage to the hive, as well as jarring, which irritates the bees, at the time of preparing them for the trip.

With the device shown, screws are driven into the bottom with heads

Frank Maags moving device

out, as pictured. Cross pieces to be used above the screens also have screws with heads out far enough to hold the angle iron. When the hive cover is removed it is but the work of an instant to put the screen in place and put on the device. Between the cross pieces is placed a double bolt which is tightened by a long nut which holds it rigid. Much time as well as labor is saved in moving by the use of this ingenious arrangement.

Established by Samuel Wagner in 1861.

The oldest Bee Journal in the English language. Published monthly at Hamilton, Illinois.

Entered as second-class matter at the Postoffice at Hamilton, Illinois.
C. P. Dadant, Editor; Frank C. Pellett, Associate Editor.
Maurice G. Dadant, Business Manager.

SUBSCRIPTION RATES:

In the United States, Canada and Mexico, $1.50 per year; three years, $3.00. Other foreign countries, postage 25 cents extra per year. All subscriptions are stopped at expiration. Date of expiration is printed on wrapper label.

How Many Pounds to the Acre?

The above question is asked too many times for the peace of mind of the editor. It always reminds me of Dr. Miller's cute way of replying to an inquirer who asked how many pounds of honey could be harvested from a basswood tree. He replied: "That depends upon the size of the tree." Yes, and it depends also on the weather during bloom, on the amount of blooming of the basswood in that particular season, on the locality, which may be more or less favorable to the production of basswood honey, etc.

In the same way, the amount of honey to be expected from an acre of some particular kind of plant depends upon the stand of that plant to the acre, on its fitness to honey production in that particular soil, on the possibility of suitable weather; but it depends also on the number of bees that work upon it. If you have an apiary within reach of that particular acre, it may be also within reach of hundreds of acres of the same bloom. The bees may go a short distance or a long distance; for the flight of bees for honey has been variously estimated all the way from a mile to seven miles, the latter being Doolittle's estimate. Alfalfa yields heavily in Colorado and little in Illinois. Basswood yields some seasons heavily and some seasons not at all. Again, there may be a dozen different kinds of plants in bloom at the same time, as, for instance, persicarias, boneset and Spanish needles in low lands, with button bush and a dozen other plants, at the same time, in the same vicinity.

If the country is all in one kind of honey-yielding bloom, as happens in the orange region, one might take an average, if one knew how many acres of orange trees and how many colonies of bees and how far the bees flew. With all these "ifs" one would probably miss it, as the crop might be nil or several hundred pounds per colony, according to the season and the care that was taken of the trees, and of the bees.

So, please, you who ask questions of the editor, ask him something difficult, but don't ask this kind of question, unless you want to get an "I don't know" answer, such as Dr. Miller so often made, when he could manage to suggest the proper reply, but was not sure of its correctness.

Maple Sugar In Quebec

The honey industry and that of maple sugar are allied, in Quebec, and the same man is at the head of both.

We are in receipt of a little bulletin upon maple sugar and maple syrup, which contains accounts of the development of the maple sugar industry, how maple sugar is made, its sale and adulteration, the qualities of a good product, and a number of recipes from the Women's Institutes of the Province of Quebec. It is very neat and attractive and may probably be had by addressing Mr. C. Vaillancourt, who is also at the head of the Apiary Department, at the Ministry of Agriculture of Quebec.

According to this bulletin, the production of maple sugar in Quebec in 1920 was in excess of thirty-one million pounds, with some 20,000 people interested in it.

Handling Bees for Show

A friend made the assertion to us that there is a secret in the handling of bees for show, putting them in one's clothes, etc. He says there is some preparation used for this. Many years ago, a man by the name of Lewis Twining came to our vicinity and remained until he had worn out his welcome and his credit. His specialty was handling bees, even putting them in his mouth. He would offer to handle the crossest stock of bees and would do it. But when the bees were very ill-humored he would smoke them a little at the entrance and carry the hive away, a few steps, before opening it. After that the bees would be easy to handle.

What was the reason of this action? By carrying away the hive he would lose all the active field bees, and it is the field bees which are cross. When the hive was opened any field bees that came out of it would at once notice that the home was not in its usual location, and the result was that those old bees would go back to the spot and hunt around. None but young bees were left for the wonder man to handle, and those young bees are never cross. If you will watch those who do the handling of bees for show, you will notice that they always carry the hive away a few steps, under some excuse or other. But that is the real reason. There is no other secret needed. Of course there are bees that do not need this, as they are peaceable ,but with this method almost any colony may be handled safely.

Misunderstandings

Special Cable to The New York Times.

London, Nov. 12.—France has been stung by insisting that bees be delivered to her as a part of reparations. German bees were working hard and living contented lives on the Luneburger heath. The climate was right and the flowers delicious in this north German garden. But France insisted that 30,000 colonies be transported to France in lieu of those destroyed by the German armies.

Though the protest at being transplanted caused loud buzzings, the transfer was made. After the first inspection of their new homes the workers struck, then declared a hunger strike. The queens refused to lay the required thousands of eggs and now France has 30,000 empty hives and Germany a receipt for this portion of the reparations bill.—(Newspaper Clipping.)

Why continue the silly stories that were current during the Great War? Our American people deplore the misunderstandings existing between the nations of Europe. But they never fail to accept an opportunity of reproducing something unpleasant. If we want peace between nations, why not try to smooth things over? It is quite probable that there was some dissatisfaction over the shipment of 30,000 hives of bees. Could it have been otherwise? Why take pleasure in reviving ill-feelings? If we only try to "love our neighbors," the Locarno treaty may bring some desirable results.

Death of Leading European Beekeeper

We are in receipt of the announcement of the death of Professor N. P. Kunnen, of Ettelbruck, Luxemburg, at 72 years of age. Mr. Kunnen was one of the leaders of European progressive beekeeping. Our editor met him at Paris in 1900, where he was one of the vice-presidents of the International Convention of Beekeepers. He had been a representative in the Luxemburg House, mayor or burgomaster of Ettelbruck, held a number of positions of trust, besides being an officer in five different honorary orders both in his own country, Luxemburg, and in Belgium. He left no descendants.

Upper Absorbents Over the Cluster

We are told that nature has taught bees to close and seal up all openings above the cluster and that, therefore, it is a mistake to place porous coverings over them. Well, nature has taught them a great many things that we do not respect. We take away some of their surplus honey; we give them additional room above the brood combs, when the crop is on; we increase the size of their entrance and give them additional shade; we move them into the cellar when the weather is cold and keep them there for months. We change the arrangements of nature because we have the bees under domestication, so to speak.

I have often told how we found out that upper absorbents, without a real air draft, are good in winter. Let me tell it again in a few words: In the terrible winter of 1884-5, we had our bees, as usual, packed for winter, but without removing the oilcloth, which made an air-tight covering over the cluster. The caps were full of dry leaves. At the end of winter we found that there were some hives perfectly healthy, while others had all the combs wet, the bees more or less soaked with their own moisture and in very bad condition. Many of the latter died. The cause of the difference was that, in some cases, the oilcloth that covered the combs had holes in them, made by the bees during the summer, and which we had neglected to change. Those having an escape for the moisture, from the cluster into the leaves, were perfectly dry; the leaves were soaked wet. The others, retaining the moisture on the combs, had suffered from it. The greater the opening, the healthier the bees.

True, this does not happen often; that is probably why those who have never had it to happen are sure that it is a mistake to have porous coverings. But those who have had my experience, in very bad seasons, are sure of the **fact** that moisture is usually bad in cold weather. "Facts are stubborn things."

California Activity

Prof. G. H. Vansell of the University of California is very active in behalf of the beekeepers. Numerous publications from his pen have appeared during recent months. His "Survey of Beekeeping in California" printed in the October and November issues of Western Honeybee gives a comprehensive review of beekeeping conditions in the Golden State.

California is fortunate in having had more careful attention paid to the sources of nectar than has been the case elsewhere. Some years ago a bulletin prepared by M. C. Richter was issued by the University and later a series of articles dealing with the subject written by George M. Coleman were published in the Western Honeybee. Vansell is continuing this line of investigation, and his article on buckeye poisoning of bees published in the December American Bee Journal is of interest to beekeepers far beyond the borders of California. Much work remains to be done in the field of nectar secretion, and every encouragement should be offered to those who are prepared to undertake such investigations.

Carniolan Bees

W. J. Sheppard, of Nelson, B. C., in "Country Life in British Columbia," writes of the Carniolan bees. His experience appears to tally with ours. The bees are pretty, when young, because " the segments of their abdomen are encircled with comparatively wide silver-grey bands. After a time the grey pubescence wears off to a great extent, so that the old bees become darker and are then sometimes hard to distinguish from black bees. As long as the queens did not get fertilized by black drones, the bees were the quietest and best tempered imaginable. But when crossed with the black, there was quite another tale to tell."

Of course, it is the same with Italians. When they are pure they are gentle. When crossed they are ill-tempered. But the tendency to swarm excessively is noticed also by Mr. Sheppard, who harvested as many as eight swarms from one colony. That is the main objection we have to the Carniolans.

Don't Disturb Them

Our text books on beekeeping are unanimous in recommending to leave the colonies undisturbed during the cold days, whether they are in the cellar or exposed to the weather. The reason is obvious. Whenever we disturb them, some bees leave the cluster, get out of reach of its warmth and perish. The cluster itself is more or less disturbed, the bees that are "imbricated" lose their cohesion, and there is loss of heat, which has to be made up by more consumption of stores. Greater consumption leads to greater accumulation of residues in their bowels, with more difficulty in staying home quietly during the long winter confinement. This applies as well to cellar wintered bees as to outdoor hives.

I have little patience with the man who worries about the possibility of colonies suffering and who, in his anxiety, examines them every few days to see how they fare. I have still less with a beginner who will carry a colony out of the cellar to give it a flight when the weather is perhaps hardly warm enough for the bees to fly and those that do fly may get lost because the hive is not in its accustomed place and they do not recognize their bearings. Don't disturb them in winter.

A Brazilian Bee Book

"Der Brazilianische Bienezuchter," by Emil Schenk, is not in the language of Spanish America, but in German. The book contains some 250 pages and gives good account of progressive beekeeping, though it still recommends the foundation cast, which is considered unsatisfactory in most countries, and a few other things considered as out of date in most progressive countries. It goes into details, however, and even describes the difference in results between the 1⅝ inch spacing of combs and the 1½ inch. It is well illustrated, with over 150 engravings. Mr. Schenk is Professor of Apiculture at the Ministry of Agriculture of Brazil, at Porte Alegre, Brazil.

Double Shift

The "New Zealand Fruit Grower and Apiarist" publishes the statement that a Mr. James Ballantyne is trying the experiment of transporting bees from Canada to New Zealand in the fall, t otake advantage of the summer of the South Hemisphere, which begins as our summer ends. So the bees would get two bee seasons in a year, and no winter. Those queens ought to need replacing often, if they are to have two laying seasons in a year. Whether it will pay to carry the bees to the antipodes remains to be seen. The colony brought for the experiment was landed at Auckland, November 16, 1925.

The Irish Visiting the Scotch

The Irish Bee Journal, in its November edition, contains the account of a visit to the meeting of the East of Scotland Beekeepers' Association that makes one wish he could have been there. Under the title "Dundee Delectable," with the photos of three Scots, C. M. Fulton, Henry Crombie and our old acquaintance, John Anderson, the writer describes his visit, in two interesting pages: "Scotland is the land of honey; give us large hives and we will make it the land for money also—from bees." Wish I had been there!

Are Poppies Poisonous To Bees?

W. A. Goodacre, in the Agricultural Gazette of New South Wales, tells of experiments made upon bees found working on poppy blossoms. He found that bees could be fed upon pollen harvested from the poppy without injurious results and explains that what gave rise to the impression that poppies are injurious is the fact that the poppies are in bloom at the period of "spring dwindling" and the poppy was mistrusted on account of its being the opium-producing plant.

Bees on the Western Canadian Prairies

By Frank C. Pellett.

IT seems but yesterday that the great tide of settlers was pouring into western Canada and turning the virgin sod to plant wheat. The rich soil and cool summer climate are especially adapted to the growing of this crop and everybody thought in terms of wheat, with now and then a field of oats or other small grain in the way of variety. Big yields of grain were secured from the rich soil which had remained untilled for untold thousands of years. Many a man paid for his land and buildings from a single crop, and those who were shrewd business men as well as good farmers soon became rich by large scale operations.

Railroads were pushed across the prairies as fast as men and money could be secured to build them and every few miles there would be a sidetrack with a line of six to a dozen elevators to handle the enormous output of wheat which was pouring from the Canadian fields. Men came with just enough money to pay the fees for filing on a government homestead and to buy a team of horses to turn the sod. Within a few years they had bought the land of restless neighbors wishing to move on, and had extended their planting over three to six hundred acres, or in some cases several thousand acres of wheat. A forty bushel crop of wheat which could be grown within a few months, leaving the farmer free for the rest of the year, caused little inducement to diversify the crops. Wheat succeeded wheat, on the same land, with clocklike regularity. There are no words in my vocabulary to picture the miles on miles of waving grain which follow each other as one rides across Manitoba and Saskatchewan.

Professor A. V. Mitchener, of the Manitoba College of Agriculture.

Since wheat is the one big source of cash income in this vast region, every man, woman and child watches the development of the crop with anxiety, from the day it is sown until it is safely in the bin. Frost is the nightmare of the northern farmer and frost is likely to occur at almost any time in the short summers of the north country.

L. T. Floyd, Provincial Apiarist of Manitoba.

As soon as the threshing starts, railroads begin moving grain to the seaboard. Heavy freight trains loaded to capacity follow each other in rapid succession, while trains of empty cars rushing back to the fields are passing in the opposite direction. When we remember that something like a thousand cars of wheat are moved over a single line of railroad during each day, at this season, and that a similar number of empty cars must be carried back, we see something of the problems of the railroad men who must, in addition, provide for the normal passenger traffic.

The Changing West

Too many settlers assumed that the rich store of fertility was inexhaustible and continued the process of mining their soil by cropping without rotation, until it became apparent that to take crops from the land without putting anything back is like drawing on the principal of one's bank account without making new deposits. Nature had taken millions of years to build up the rich soils, but even the richest soils require conservation if they are to continue to yield their wealth indefinitely. Diminishing yields, together with the

after-the-war readjustment which struck such a hard blow to agriculture, made wheat growing unprofitable. Many who had gone into debt to buy more land during the flush days found themselves unable to meet their payments and gave up and quit. Those who were unhampered by debt found that the old system of growing one crop only would no longer provide sufficiently for the family needs.

G. M. Newton, President of Manitoba Beekeepers' Association.

It was at this stage that we began to hear about bees in western Canada. Men were looking for some legume which could be grown in the rotation of crops to check the decline in soil fertility, and sweet clover met this need. At first a small field appeared here and there, and then, suddenly,it was sown over immense areas. The large plantings of sweet clover provided ideal conditions for the keeping of bees. Diversification became the talk. Everybody began to realize that the day of single crop farming in Canada had gone by. Livestock, dairy, poultry and bees are being added to the farms which formerly had grown wheat and nothing but wheat.

A few bees had been kept in the vicinity of Winnipeg for many years, but they had attracted little attention. R. M. Muckle, the Provincial Apiarist, had resigned his position to engage in commercial work. With the changing conditions on the farm the few wide-awake beekeepers organized with G. M. Newton as president. Newton is engaged in the wholesale dry goods business, being connected with Greenshields Ltd., one of the biggest concerns of its kind in Canada. He was accustomed to doing things in a big way. Newton had a delightful home on the Red River, at Selkirk, and found much pleasure as well as profit with his bees.

When Newton, representing the new association, went to the Department of Agriculture asking that a permanent Provincial Apiarist be appointed, the officials were inclined to make light of the possibilities. They called his attention to the fact that only 50,000 pounds of honey were produced yearly in the entire province. They also said that it would be poor business for the department to spend half the entire value of the output of the industry in hiring a man and paying his traveling expenses. However, Manitoba beekeepers are not easily discouraged. They saw the change coming and knew that, with the increased planting of sweet clover, beekeeping would soon be greatly extended. They wanted those who started new to start right and they wanted some government supervision to prevent as far as possible the spread of disease. As a result of the pressure of the beekeepers, the department looked about for a man.

Down in New Brunswick a similar department had found a successful farmer beekeeper whom they had persuaded to take up extension work. His success had been so marked that Manitoba offered him some special inducements to go west, and accordingly, L. T. Floyd became Provincial Apiarist of Manitoba. Then things began to happen pretty fast. Floyd went out among the beekeepers and found out what they were doing and called their success to public atten-

Dr. S. A. Merkley, Secretary of the Saskatchewan Beekeepers' Association.

tion. It would take too much space to tell all the story of the development of the work through the co-operation of the Provincial Apiarist, the College of Agriculture and the Manitoba Beekeepers' Association. At one of the recent meetings of Manitoba beekeepers Newton stated that production of honey in Manitoba had increased from fifty thousand pounds to more than two million pounds, annually, in the short period of four years. Fortunately, as soon as the interest in beekeeping became apparent, the College of Agriculture took it up and offered regular instruction. Prof. A. V. Mitchener, of the College, proved a good co-operator, as did the others, and all these agencies worked together in apparent harmony. This probably accounts for the remarkable showing which has taken place in the short period. The college, the department and the association, are all working toward the same end.

Good Beekeeping Methods

The thing which surprised me so greatly, after spending many days traveling among the beekeepers of the northern prairies, was the uniformly good methods which are followed. Had the beekeepers let things take their course without any supervision there would have been hundreds of persons starting with bees in boxes, with hives without foundation, and every other abomination common to the older settled regions. I was amazed to find nearly every beginner in all that region starting with Italian bees, full sheets of foundation and accurately made hives. I have no fear for the future of beekeeping under such conditions. Men who learn the thing right from the beginning will continue to follow proper methods and there will be less demoralization through price cutting, the spread of disease and other things which come through ignorance of proper methods.

It hardly seems possible that, in a province where there were so few bees such a short time ago, we now find one of the strongest and most active beekeepers' organizations on the continent. It is not uncommon for one hundred or more to come together for a field meeting and a picnic dinner, in summer, or three or four hundred for a winter meeting.

Saskatchewan Also

The success of beekeeping in Manitoba, combined with similar economic conditions on the farms, was responsible for the rapid spread of interest to the neighboring province of Saskatchewan. Although the industry is even younger here we find the same co-operative spirit and the same successful growth. Dr. S. A. Merkley, of Moosejaw, had kept bees in the east and found himself constantly wishing for them again, after establishing himself in the west. He was told that bees could not live on the cold northern prairies, and such pessimistic talk kept him from trying for some time. Five years ago he endeavored to locate every man in the province who had bees. In a region more than three times the area of the state of Iowa he found only twenty-three. Merkley bought five stands of bees and had them shipped to Moosejaw to determine whether they could be kept there successfully. From the five hives he took 1,500 pounds of honey the first season and increased them to fifteen full colonies. Three hundred pounds of honey from each hive looked pretty good, even from the standpoint of the eastern sections where bees were kept commercially, and when he succeeded in wintering the entire fifteen colonies Merkley knew that Saskatchewan was a good place to produce honey. He started at once to bring the facts about Saskatchewan to public attention, and from that day to this has devoted much time to beekeeping activities. When the association was organized he became the secretary and has seen the little company of 23 beekeepers increase until there are now about 800. Merkley keeps his bees in large hives and has few swarms.

Dr. C. F. Patterson, of the University at Saskatoon, likewise offered the facilities of the institution to push the good work along. When the interest in bees became apparent and letters began to reach the Department of Agriculture at Regina, asking for information, the Deputy Minister, Hon. F. H. Auld, felt that some one in the department should be able to offer first-hand information. Since no one of the 150 members of the staff was a beekeeper, he decided to try it for himself. Both Mr. Auld and M. P. Tullis, of the department staff, bought bees. Visitors to the grounds of the Parliament building may now see apiaries conducted along up-to-date lines. Auld and Tullis know from experience what to expect and can tell their correspondents how to proceed. In Saskatchewan, as in Manitoba, we find this effective co-operation of the Department of Agriculture, the University and the Beekeepers' Association. In Saskatchewan also I found the beginners starting along right lines as a result of careful oversight.

The Honey Crops

I am confining this article to a consideration of Manitoba and Saskatchewan, where conditions are very similar. Alberta, which has somewhat different conditions, will be dealt with in another article. In the southern part of these two provinces there is a large area of bare prairie with little native flora from which the bees can gather honey. In neighborhoods where sweet clover has been introduced bees are getting crops of honey which range all the way from 50 pounds to 300 pounds per hive. There are neighborhoods which appear unsuited to beekeeping, while there are others which I would expect to average better than 100 pounds per hive for a ten-year period. The sweet clover available is of first importance, but the presence of such trees as box elder, locally called Manitoba maple, wolf willow and poplar will provide early pollen and some nectar. Dandelions are also present in some localities and add much to the spring forage.

North of this open prairie section is a wide area of park or bush country where prairies are interspersed with thickets of poplars valuable for spring pollen, and with willows, saskatoon, wolf willow, etc. In these areas snowberry and anise-hyssop are common, and both these plants are the source of surplus honey. Here are to be found the best beekeeping conditions. In such a neighborhood, the growing of sweet clover insures a good location. Sow thistle and Canada thistle are two bad weeds widely scattered on the prairies which add much to the beekeeper's return.

An Opinion of E. M. F.'s Honey Selling

E. M. F.'s method of selling honey, given on page 468, is only the age-old method of cutting prices. The very large beekeepers in his neighborhood would never have been able to grow large if they had started by cutting the local prices, as no price cutter can stay in the business. Any business man who has too many bargain days has very soon a clearing out sale.

What would E. M. F. do if a neighbor started to give five **full** combs for $1.00? His customers would go to the neighbor. Suppose someone else gave six combs for $1.00?

Price cutting leads nowhere, as there is at all times some fellow who is willing to cut your cut price. So better figure the cost of your product, add a reasonable profit, and you will find it is about the price your successful competitor asks for his goods.

R. Diemer,
California.

Putting Visions of Honey Before Eye of Consumer

By Fred B. Porter.

DO you think of honey advertising in the same way that Uncle Tommie regarded beefsteak?

Uncle Tommie's viewpoint was set forth in Writer's Digest, by Lemuel De Bra, a short story writer:

"One summer vacation I went out to Uncle Tommie's to help thresh grain, and since they doubted my knowledge of machinery and agriculture generally, they gave me a team of old plugs and set me to hauling oats to town. It was a fine job, as the old skates knew the road better than I did, which permitted me to tie the lines, curl up on the spring seat and continue reading a much-tattered copy of 'Daredevil Dick, or Captured by Redskins."

"About three o'clock the first day, Uncle Tommie, an elderly gentleman with an abnormally choleric disposition, hailed me.

" 'Ye can be bringing' 'bout fifteen pounds av beefshteak this trip,' he says; 'and tell 'em to charge it.'

"Now, I had been brought up in the city, where folks are particular whether they get round steak or tenderloin or porterhouse or sirloin or any of the various other cuts, according to their choice. So I ventured to ask Uncle Tommie what kind of steak he wanted.

" 'Beefshteak, I told ye!' he says, gesticulating angrily with his old pipe.

" 'I know; but what kind of beefsteak?'

"Whereupon Uncle Tommie began jumping up and down as though he imagined I was beneath his big boots. 'Beefshteak, ye domned fool!' he shouted. 'Don't ye know—'

"But I fled. Of course, the butcher gave me round steak. He explained that not one of his customers in ten ever thought of any other kind. It was all 'beefshteak' to them."

Are your honey advertisements just "beefshteak" to you, or have you considered some of the different types of advertising,

The biggest part of the honey advertising that I have seen has been modeled after the advertising of the department stores or the chain stores. It assumes that everybody is in the market for honey and that the only thing needed is to say "honey" and add the price. The aim of such stores is to make today's advertising bring in a heavy volume of business tomorrow—quick action stuff.

Such advertising will likely sell some honey. But the space ought to be used for the double purpose of directing those already in the market for honey to a source of supply and for getting other folks to begin turning over in their minds the possibilities of getting some honey. You can have advertising that will start them in a favorable frame of mind to considering honey. At the same time you will not lessen its effectiveness for making immediate sales.

"A market is a state of mind of a group of people," John Lee Mahin, an advertising agent, once declared. It was a group of coal men in Cincinnati that he was addressing, but it applies to the honey-marketing field as well.

Some good honey advertising has been run in the newspapers and sent out through the mails that did not "bring home the bacon" immediately. Come to think of it, do you know of many honey campaigns that

In this ad the reader gets some of the sensations of having honey on the table without actually doing so.

started bargain-counter rushes when eager customers came in with copies of the advertisement in their hands? I like that advertising expert who is continually insisting that merely running advertisements is not a substitute for magic wands.

Price advertising is one of the "cheapest cuts."

Let us consider a choicer cut of advertising—the kind that is honey-cured. The best advertising must be honey-like.

Few honey-producers will question the effectiveness of sampling and demonstrating among likely prospects such as a good class of housewives. But possibilities in that direction are limited. One man can make only a certain number of calls. Hiring others is expensive, and getting the right kind of demonstrators is a problem. A big baking powder company told an advertising writer that it costs from seventy-five cents to one dollar for each housewife its demonstrators interested to the extent of giving an order for a thirty-five-cent can. However, the company regarded the money as well spent, because the demonstration was so thorough that most of the women remained permanent customers.

If it is impossible to cover the territory with demonstrations, why not try to make the advertising vivid enough to give the readers some of the sensations of eating honey without actually doing so? Next to the actual sampling of honey, painting a word picture of eating honey is probably the shortest, quickest route to the consumer's palate.

You are handicapped in the matter of using pictures of honey; it's hard to make a pen-and-ink drawing of honey such as would be used in a newspaper, as effective and appealing as one of, say, an apple. Therefore words are the most available materials.

See how effectively words that suggest the time to eat honey are used in advertising Golden Blossom Honey in eastern papers:

"It's pancake time! The tang in the air brings up visions of a golden stack of delicious cakes for breakfast.

"And how good they taste with Golden Blossom Honey! It's real honey—pure honey! The perfect spread for bread, cakes, muffins, biscuits.

"Wholesome—nutritious. You can't give the children too much of it. And better than sugar for flavor and sweetening cakes, cookies and ice cream."

Right there in that advertisement is a principle for good honey advertising—**"bring up visions."**

This kind of advertising for foods was once defined by a writer in Printers' Ink as, "bringing the product as close as possible to the eating point." It is getting the appeals of taste and smell into an advertisement.

As a general rule, you find more appetizing language in the advertising of honey substitutes and the products such as candy and bakery goods that are only tinged with honey.

Sometimes the deliciousness of the honey is indicated by comparison and by reference to the conditions under which the honey is obtained. For example, Odds Bodkins writing in Advertising and Selling Fortnightly, commented:

"No one need tell me again that the farmer is incapable of marketing his own wares! This week I have received postcards from two farmers and no agency copy man ever put more lure into copy than do these two farmer-advertisers.

"One of them starts out: 'McIntosh Apples, from the sunny, rolling hills of Westchester, and Pure Honey, gathered by a million busy bees; both with the full, luscious flavor characteristic of the Eastern product.'

"The other, not to be outdone by his rival, writes: 'Apples like those with which Eve tempted Adam, and Honey such as Cleopatra served to Antony—Yours at $1 a box of 24 Apples and $1 a quart (3 lbs.), $3 a gallon (12 lbs.) of Honey. Just check what you want and return this card with cash or check.' "

A couple of years ago, about Christmas time, I noticed that the honey producers in Ontario seemed to be trying to make their advertising more interesting to the reader, even though they were using only a limited number of lines in the classified columns.

There is a definite appeal to most people in the little announcement of Leonard Myers, of Stratford, Ont., which began:

"Myer's White Clover Honey. Flowers Make It—Bees Gather It. * * * "

This kind of advertising—the kind that gradually gets people into a favorable frame of mind toward honey—cannot be done with a single insertion or a single mailing. Frequent contact is necessary while you are making them acquainted with the delightful possibilities of honey.

Nor is it the kind of advertising for a honey producer who will appraise the returns from a single season. It is of the kind that the late Artemus Ward cited, as Printers' Ink recalled at the time of the noted advertising man's death:

"Sitting in a restaurant, I heard a discussion over the payment, on the part of the proprietor, of a bill for advertising in the street cars. He expressed the opinion that the advertisement did him no benefit. I had been for some six months a frequent customer of the place, generally bringing one or two friends with me, until I had introduced about ten persons to that restaurant, half of whom were quite regular customers. The sign in the car originally led me to the place, but if half the proprietor's patronage had come in that way he would not have been directly aware of it.

"Advertising is often, indeed generally, an unseen force."

Honey In "Honey Scotch"

In May last, "Printers' Ink" published an interview with the president of the J. N. Collins Company, manufacturers of "Honey Scotch." This article was translated for the French Trade Magazine "Vendre" and it brought us also several enquiries from United States beekeepers and an enquiry from a French beekeeper who wished to know how much honey was used in "Honey Scotch." So we sent the enquiry to the J. N. Collins Company and received the following reply:

"The mixing and cooking of honey for the manufacture of 'Honey Scotch' is a trade secret. But we can assure your friends that honey is used in substantial quantities in our product. We purchase honey in solid carloads and have recently purchased two carloads from a North Dakota producer. We have been using California honey put up in 60-pound tins.

"We have the best results from strong flavored sage honey, as we like to keep all of the honey flavor that we possibly can in our candy, and a mild flavored honey does not give us the results and flavor that is produced when a strong flavored honey is used."

Strong honey appears to be in favor with manufacturers of honey candies and cookies. The French gingerbread "pain d'epices," is invariably made with buckwheat honey, so much so that, when the writer smells a field of buckwheat in bloom, it takes him back to the days of childhood, when he was fond of "pain d'epices."—C. P. D.

Honey Custard

One egg, one tablespoonful of honey, one cupful of rich milk, little nutmeg, beat the egg and add the honey and other ingredients; cook until quite thick; very delicious.

Starting with Bees in Saskatchewan

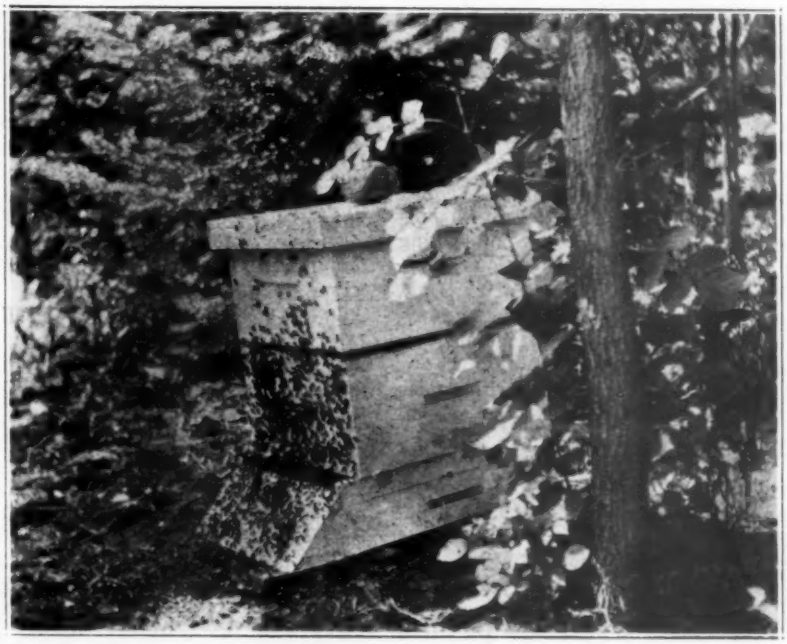
By F. H. Auld.

Hon. F. H. Auld, Deputy Minister of Agriculture for the Province of Saskatchewan, is in active charge of an organization of about 150 people devoting their time to the development of every branch of agriculture suited to that region. When farmers on the northern prairies began to manifest an interest in bees, Mr. Auld felt that someone in the department must be able to give first-hand information on the subject. He accordingly took up beekeeping himself. At our invitation he tells here his experience as a beginner with package bees. F. C. P.

HAVING acquired a brief and somewhat limited acquaintance with bees by buying a full colony in May, 1924, I became ambitious to extend my operations in 1925, and placed an order for some two-pound packages with a firm which I was informed by an expert beekeeper could be relied upon to furnish good stock. My order was placed with the stipulation that delivery was to be made by the first week of May—a time when we have a fair amount of dandelion in bloom here—and the bees arrived in good order on May 6.

My equipment consisted chiefly of new hives and frames with foundation, but I had also two supers of drawn comb and enough frames of honey to give one to each newly hived colony but one. This, I consider, simplified my work very materially. I have read of packages being hived on foundation, but it is not a job for a beginner, especially early in the season before the honey-flow has well begun; and, if one waits until June to get bees, there is no particular object in buying packages, as nuclei can be had at a reasonable price for later delivery.

Hon. F. H. Auld, Deputy Minister of Agriculture of Saskatchewan.



A May package casts a swarm in July at Auld's apiary.

Before my bees arrived I had my hives nailed together and painted and everything in readiness for my guests, but it was with a feeling bordering on fear and trembling that I undertook to release the bees from their traveling cases. I began, however, by sprinkling sugar syrup on the wire sides of the shipping cases, which gave them a change of food and quieted them. Then in the evening I transferred them to their new homes by quietly prying off the lid, carefully removing the cage containing the queen, which I hung between frames of drawn comb, and placing the shipping case, with the bees still in it, into the hive, from which enough combs had been lifted to enable the case to be inserted. The queen cage was plugged at the candy end, with a cork, to prevent the release of the queen before the bees reached their destination. This cork I removed before putting the cage in the hive.

For the package which I was not able to supply with a comb of honey I gave frames of drawn comb, into which, as they lay flat, I had poured sugar syrup. As a few cold days followed the hiving of the bees and I feared the supply of syrup was inadequate, I gave a quart of syrup in a Boardman entrance feeder, but found that bees from another colony were robbing and that considerable of the syrup was going elsewhere. A better way of feeding when there is no honeyflow is by means of a division board feeder, or a friction top pail with perforated lid inverted over the frames and used with a super. Should feeding be done with the pail during a cold spell with freezing temperature at night a division board to restrict the space occupied by the bees and sacks to cover the pail and frames would be desirable to conserve heat and prevent brood becoming chilled.

When I examined the hives, three or four days later, I used a little smoke to quiet the bees, and found that only one of the six queens had been released. The others I liberated by prying off the screen at the

opposite end of the queen cage. Each of the six queens was accepted by the bees, and with one exception proved to be good ones.

Some of the bees seemed to retain an affection for their temporary home and were reluctant to leave it, so the shipping cases were then removed from the hives after an attempt had been made to shake the bees from them. The cases, with what bees remained, were then left in front of their respective hives and were soon vacated.

The chief advantage, in getting packages of bees from the South, is that they can be had at a date which will permit them to build up to a strong colony by the beginning of the main honeyflow. My packages arrived at a time when the dandelion was in bloom, and in three to four weeks there was an abundance of maple, caragana, and wild fruit blooms, so that, though they started without much honey, they soon had ample stores to meet all needs.

In spite of the honeyflow being very poor in August, my six packages drew out an average of 25 combs each and produced an average surplus of 97 pounds. One of these colonies produced only 50 pounds; the queen, being a poor one, was superseded.

In comparison with the packages, I may cite my experience with six three-frame nuclei which I received on June 12, when there was a good honeyflow and my package colonies were working in the supers. These also drew out all of their combs and produced an average surplus of 53 pounds. My best package produced 120 pounds and my best nucleus 81 pounds. Considering the date of delivery, I think my nuclei did remarkably well, in view of the honeyflow in August being so light. August in 1924 was a good month and produced most of our surplus of that season.

Had August honeyflow been greater in 1925, the difference between packages and nuclei would probably have been less. This experience covers only one season, but it suggests to me that a beginner who wants to buy package bees can get along safely if he understands the instructions of experienced men and follows those instructions carefully. Otherwise he had better begin with a full colony or a nucleus or two, which will prove less terrifying than packages, at the start.

Building Markets For Our Honey

By Harvey W. Ische.

WHILE wintering, disease and weather conditions play a very important part in the beekeeper's life worries, the problem of finding sufficient markets for our products at a profitable price is fast becoming a question meriting our concern. Commercial beekeeping has advanced by leaps and bounds, altogether out of proportion to the demand for honey. This is at least the position in which our Ontario beekeepers found themselves a few years ago. Following the example of many other lines of business, our beekeepers formed a producers' co-operative and left the question of finding a market great enough to absorb our ever-increasing surplus in the hands of their company's officers. The plan has been successful from the very start, for at the time the new organization was formed, Ontario beekeepers were faced with the problem of marketing a heavy holdover, along with a bumper crop of new honey. Unhesitatingly we claim that, except through the medium of orderly marketing instituted by the co-operative, a demoralized market would have resulted and the effects would probably be felt at the present time.

The salvation of the co-operative and of the industry was the overseas market. Prior to the past three years, Canada exported practically no honey, but since the inception of the new company a creditable amount of our honey is finding its way to England, Holland, Denmark, Germany and other European countries. The proper grading and prominent advertising of our wares should win for Ontario a place on the overseas markets to take care of our surplus for some years to come. "Only constructive criticism was offered," says one paper concerning the recent meeting of the Ontario Honey Producers' Co-operative, Ltd., and no wonder, for this company, owned by the producers themselves, has been the means of saving our industry from the most serious case of over-production our honey business had ever known.

It is estimated that Canada has produced 21,000,000 pounds of honey in the season of 1925, or practically three times as much as was produced a few years ago. The western provinces are fast increasing their production and thereby cutting Ontario from one of her principal markets. Twenty-one million pounds seems a large amount of honey for this country, but with a population of nine million it really only means a little over two pounds per capita. Why should we be exporting honey when our own population consumes so small a quantity? There must be a reason.

The principal factor controlling the sale of honey for home consumption, I believe, is the lack of proper advertising. There is no food product that has such strong "talking points" as has honey. It is a food that is pure, clean, and, above everything else, healthful. The value of sugar in our food is not fully appreciated by Americans. We hear sometimes that American people are destroying their health through the use of too many sweets. The fact is, Germany leads the world in the consumption of sugar per capita, and there is no more healthy people to be found anywhere. German army officials have found that sugar is a strong stimulant, and that while alcohol stimulates by making accessible already built-up strength, and then leaves the body in a weakened condition, sugar stimulates by building up new strength. So sure were the Germans of this fact that, particularly in the earlier days of the great war, every soldier's knapsack contained an extra ration of sugar. And who knows how much Germany owes to sugar in enabling her to hang on though entirely surrounded by enemies?

The test of a food's desirability is the enthusiasm with which it is welcomed by a small boy. Give the small boy a piece of good home-made bread spread with choicest honey, and there is nothing he will accept with more enthusiasm. The writer knows, for he was a boy himself not so many years ago.

Now the point is this: How can we induce people who need an extra amount of nourishment, to withstand the drain upon their strength, caused perhaps by overwork, to realize that honey is a food that will benefit the worn-out body in less time and more effectively than any other food? Second, how can we induce the American boy and girl to clamor for "honey bread"—bread spread with honey—every time he feels hungry? There is only one way, and that is, advertise.

Slogans and catch phrases have drawn the public's attention to many nationally advertised foods. Honey needs every slogan and catch phrase that can be devised in its favor. Beekeepers must tell the public of every practical use to which honey can be put. Individually we can do much, but the greatest success will be met when we follow the example

of our bees and work co-operatively. There should never be a case of overproduction of honey, for honey is so good a food that the public would readily make use of every pound produced if we would only help them a bit by keeping our product before them. Honey goes "so much farther" than jam or the cheap corn syrups that no housewife can afford to do without it. But the consuming public does not know this; they can only be taught through persistent advertising, and our advertising campaigns can only meet with the greatest success when the beekeepers collectively spend their money and thus create advertising prominent enough to catch the eye of the public. They talk of the school, the church, radio, and other educational agencies, but, believe me, advertisements play a very important part in the lives of our people, and their importance is growing.

(From the foregoing, it appears that the "Ontario Honey Producers' Co-operative, mentioned by the editor in his notes from Canada, page 15, in January, 1925, is successful. More such associations are needed throughout America.)

Nothing New Under the Sun

By J. Skovbo.

WHAT will the next generation think of our present day beekeeping and of our bee literature? This question was strongly impressed upon me recently when I had the opportunity to review a volume of the American Bee Journal of the vintage of 1895. Thirty years may not be a very long span of time, as history goes, but still it is half a lifetime, and few are the beekeepers living and acting in this old volume who are still active in business. But some there are, and what a store of knowledge and experience must be theirs, these veterans of thirty or forty years' service among the bees, and how pretentious it often is for us younger beekeepers to criticise such persons and pitch our opinions against theirs.

George W. York was, of course, then the editor of the A. B. J., which was a weekly published in Chicago, and a picture shows him as a young, rather sporty looking man, who for all of that shows a marked resemblance to our now more dignified dean of bee culture. C. P. Dadant, then of the firm of Dadant & Son, is described in the first number as "a man well known to the bee fraternity." The index shows that the following writers contributed the most articles for the year: Dr. C. C. Miller, G. M. Doolittle, B. Taylor, Charles Dadant. There is one short article from the pen of L. L. Langstroth, likely the last he wrote (this is printed three days before his death), and in the same issue is the report of the remarkable ovation given Langstroth when he attended the convention of the North American Beekeepers' Association in Toronto four weeks earlier.

It is surprising how many of our present day problems were live topics also thirty years ago. For instance, we find that sweet clover was found a valuable crop for bees and cattle in Nebraska for several years. Why did it take twenty-five years for it to get to the Dakotas? Carniolans were much under discussion, and exactly the same arguments were presented pro and con as are submitted by our up-to-date writers. Foulbrood and paralysis received much attention and several "sure cures" are revealed, among others a lysol treatment for foulbrood. No distinction seems to have been made at that time between American and European foulbrood.

Not a little is said about "five-banded Italians," and quite an excitement was caused by Apis Dorsata, or the giant bee of India. A Mr. Holt of Kentucky offered those queens for sale for three to eight dollars, and advocated them for crossing with other bees. He claimed that the hybrid would produce "more than twice the amount (of honey) of any race known." He also had this to say: "The young queen is generally fertilized in the hive or on the ground. Put a young Italian or black queen in a cage with an Indian drone and he will fertilize her at once, and will fertilize as many as four queens before he stops." Mr. Holt, however, later had to retract, and returned money received for queens.

Large hives vs. smaller hives was also a common argument thirty years ago, and Mr. Langstroth's note, referred to above, was in support of a thirteen-frame hive. They did not then seem much concerned about what constitutes a colony of bees; instead, some efforts were made to distinguish between beekeeper and apiarist. Honey prices were lower than at the present time. California producers were reported as receiving 3 to 3¾ cents per pound for extracted, and 8 to 9½ cents for comb honey. Two carloads of Utah fancy comb honey netted 10 cents on the Chicago market. Wax was quoted at about 30 cents.

Leading magazines printed erroneous articles about bees and were roasted therefore by the better posted beekeepers just as is done today. But that it is human to err, even for the best of us, is proved in a humoristic editorial pointing out that, after being written by A. I. Root, reviewed twice by Doolittle and again by Dr. C. C. Miller and by Ernest Root, the 1891 edition of the A, B, C of Bee Culture persisted in using the male gender for comb-building workers.

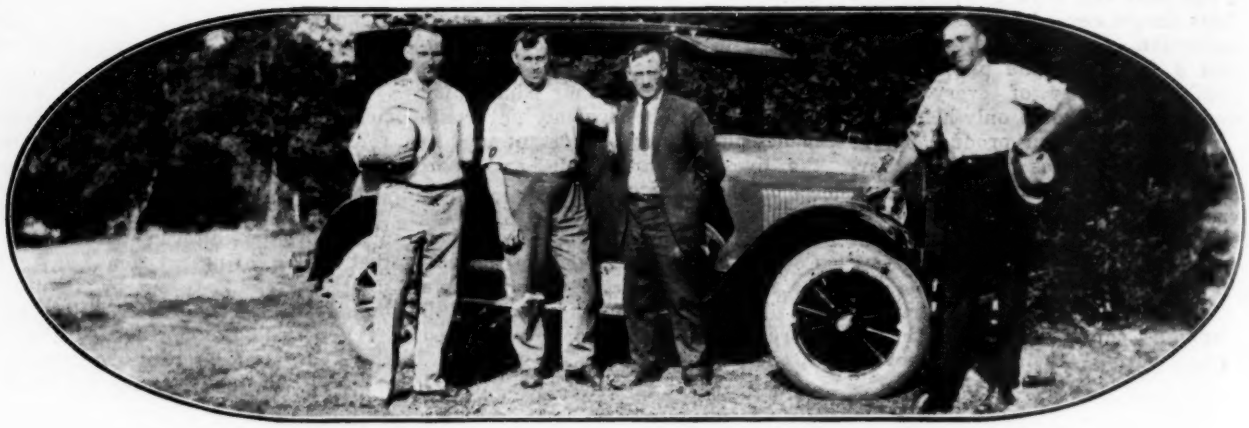
Finally, as an honest confession is good for the soul, during the last year the writer has translated from another language two articles on entirely different topics, and submitted both to publishers of our leading magazines in the belief that he was conveying to American beekeepers some new and original knowledge. The publishers must have had somewhat the same idea, as both manuscripts were received in a rather complimentary way and were printed in recent issues. Now then, imagine my surprise and—yes, humiliation—in finding the one topic quite well covered, and the other partly so, in this yellow, dog-eared volume of thirty years ago. Said the ancient sage: "There is nothing new under the sun."

One of the Old Guard

The "Southern Agriculturist" of September 15, under the title of "Men Who Have Stuck to Their Jobs," gives an account of the life of John M. Davis, who spent 65 years with the bees, and 53 of those years as a queen br ler. He has made good, evidentl, or he would not be still filling orders for queens. The article mentions the buying of an imported queen from Charles Dadant, by Davis, some 50 years ago. If we are not mistaken, he bought several of the Dadant imported queens, at different times. Very few beekeepers can show the record of Mr. Davis.

Smaller Apple Crop this Year

The per capita consumption of apples in the United States is now about half an apple a day, says the Department. The total crop this year will reach 164,000,000 bushels compared with 179,000,000 bushels last year. The decrease in total production, however, is partially offset by the fact that the crop is of unusually fine quality, and less than the usual proportion will go to waste or be used for manufacturing purposes.



Four of Iowa's hustlers, Engle, Frandsen, Beals and Schenckle, at Anthon, comparing notes for the year.

Following the Sweet Clover North

By G. H. Cale.

"WHAT a wonderful plant is sweet clover." To have written this ten years ago would have produced discord. Sweet clover was a weed, an undesirable, to be gotten rid of in the quickest way. There were a few who reasoned that, since it was a legume, it must have value, and as soon as they had proven a use for it others followed the lead.

So sweet clover became a welcome plant. It has uses. Now we can easily write, "What a wonderful plant is sweet clover," and get a symphony,—from dairyman, stock feeder, farmer, seedsman, and beekeeper.

This is a fine tie-up in interest, and certainly one we should foster in every way, since it has the possibility of permanence. If sweet clover generally takes a place, along with alsike clover, as a legume in crop rotation, beekeeping will be just so much surer a business.

While there is a wide interest in sweet clover, it is an uncertain interest, a questioning experiment as to whether it is "all that it is cracked up to be." This is true even among beekeepers. There is no doubt of its value as a honey plant, since it is well up on the list of heavy nectar yielders; there is a doubt of its present place in farm practice.

We have been curious to know more of this, first hand, and a trip the past summer through Iowa, Nebraska, Minnesota, North and South Dakota gave us enough information to be perhaps of some value.

I have called this sketch "Following the Sweet Clover North," for north it is surely going, although it is spreading out east and west rapidly as it goes. Since it has long been established in western Iowa, this section was first visited.

Here sweet clover is common, so common that it is not much talked about. It is accepted. The soil is sweet, it wears quickly, and sweet clover brings it back, with no special soil treatment needed to get it to grow.

The student of soils would have a delightful time in the Sioux City district. Loes deposits cover this area, wind blown soil of very fine particles. It seems incredible that there could have been storms of enough violence actually to blow large bodies of dirt from one place to another. But such is the fact. The loes soil was blown in from northwest of Sioux City, over long distances, and deposited on the river bluffs. It is deep, overlying the native rocks. It is sweet and fine. Roads are cut through it with sides that stand straight up and down for years with little or no washing. Sioux Citians boast of their crops. "It is the heart of America," they say.

Here beekeeping has become well established. There are quite a number of large beekeepers who pretty well divide the territory among them. The pioneers, as far as I could learn, were Brown and Christy. Christy devised an unusual type of hive and a system to go with it which proved very successful. It still has some advocates, the most prominent of whom is probably B. A. Aldrich, of Smithland.

Aldrich has about 800 colonies in reach of alsike, white clover, sweet clover, and fall flowers. It is a delight to visit with him, since in the twenty-five years of his beekeeping he has been quite successful and has

An outapiary of J. D. Beals, near Anthon, Iowa.

The well kept apiary of the Andrews Brothers, at Mapleton, N. Dak. Bees and sweet clover work together on this farm of several thousand acres.

developed a beautiful place. It is scenic, set in the hills, with house and grounds matching the surroundings.

At Oto, M. J. Beals and his son, J. D. Beals, have about 1200 colonies in eight yards. Their chief source is sweet clover. It became clear, at once, from talking with Beals, that sweet clover alone is not as valuable as sweet clover supported by other plants, as in Aldrich's case.

I said that sweet clover here is common and accepted. That is true, but the use the farmer makes of it may be disturbing to the beekeeper. Because corn prices were good in 1924, much sweet clover had been plowed under to make room for more corn, and, while the usual ratio of sweet clover which would reach bloom was one acre in six or eight, it had been reduced to one in twenty. In some places it was as low as one in forty.

Near Beals, at least, some of the farmers are beginning to use the yellow sweet clover because the seed yield is evener. If this becomes very general the beekeepers will need to change their practices somewhat, since it blooms much earlier than the white and it is not necessary to have the bees up to strength at the time of its bloom.

We found the younger Beals seeding Hubam and trying to interest others in it. He has 100 acres of land in it. There are advantages to it, since it blossoms and seeds in one year, rots quickly when plowed under, and releases the land for use the next season.

The locations of Beals and Aldrich bring out the difference between sweet clover unsupported and sweet clover supported by other good sources. I could tell of the visits with Frandsen, Engle, Williamson, Southworth, and Brown, but it would be aside from the subject. They are familiar and each of them has something worth while telling of, but it is hoped to bring them out in some other form in the Journal.

Our course was north from Sioux City into Minnesota. Sweet clover was here and there apparent, but only here and there. It is hard to get any adequate notion of its abundance from the main roads, as only a portion of the number of farms is seen. Where there are two or three fields of clover, many more may lie beyond.

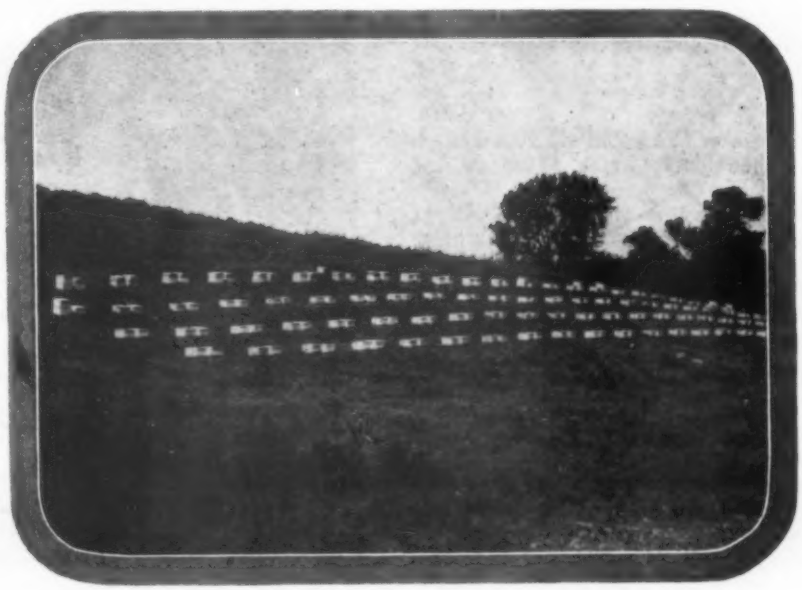
At Graceville, clover became more plentiful. There seems to be considerable of the common white clover there, too. According to the report of the Standard Lumber Company, which is a trading center for bee supplies, the amount of sweet clover is rapidly increasing and beekeeping is flourishing.

Apparently the spread of clover is outward from centers where a few find out its worth and others follow in its use. Between these centers it is scant. As the interest grows the acreage of clover grows with it, but with considerable fluctuation, as sentiment becomes fixed for or against it. This is in direct contrast to the situation in Iowa, where clover has been established for a long time.

We sidestepped into the Minnesota lake country, where the clover has not yet penetrated. Its abundance is along the western boundary of the state. Alsike, however, is marvelous, to the east. Jager tells of its abundance and of the possibilities of beekeeping all through northern Minnesota. If it is as good as it was in the country through which we traveled, beekeeping will have a fine future there.

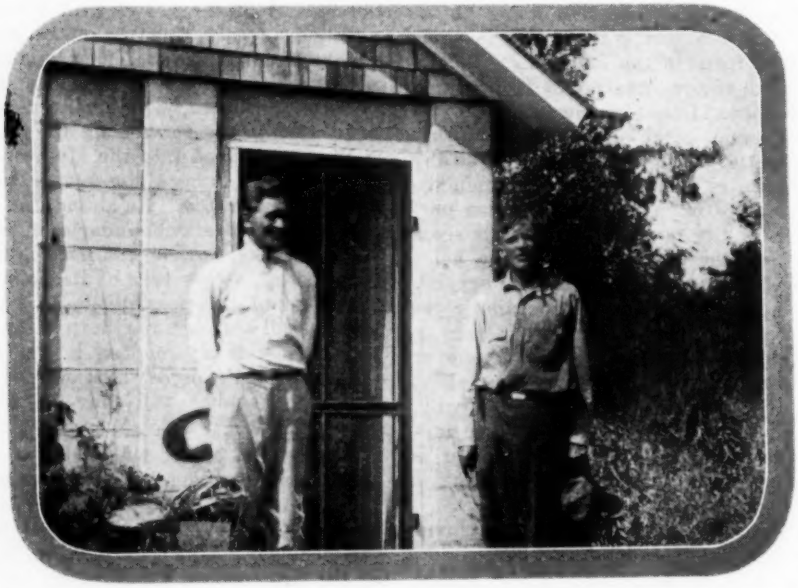
From Lake Mary, we circled west again, and at Campbell spent some time inquiring the sentiment of the farmers about the permanence of sweet clover. They were quite full of the subject, but of different opinions.

The ratio of clover is about one



Newly established apiary of C. S. Engle, near Sioux City, Iowa.

Apiary of Fred Marquette at Fargo, N. Dak. Most of these northern yards are remarkably pretty and finely equipped.



One of Andrews Brothers (at right), and helper in front of honey house at Mapleton, N. D.

acre in ten, as far as we could learn. Its planting, however, is still decidedly in the experimental stage. As their soils are apt to be quite wet, sweet clover is proving to be a fine help in letting the moisture down, because of the extensive root system of the clover, which opens up the soil.

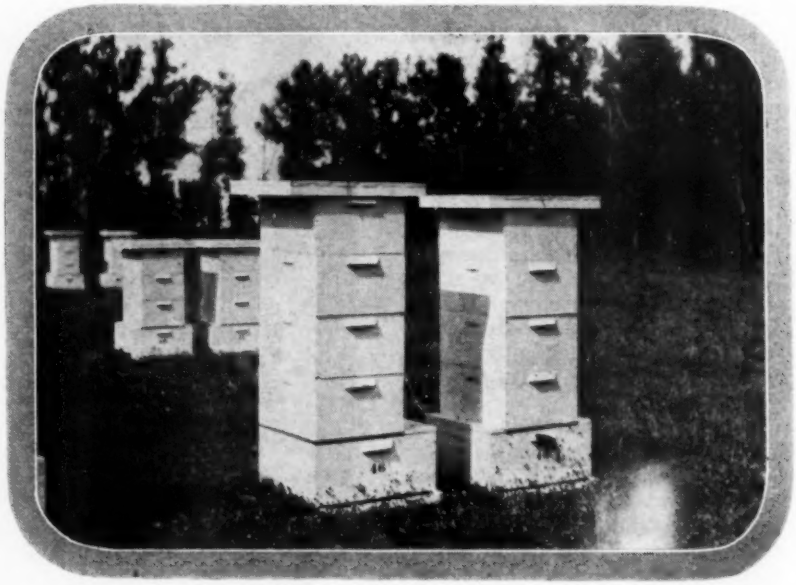
Some say a one-year growth of sweet clover is as good as a three-year growth of alfalfa. It makes the finest kind of pasture, which, for them, is important, as natural grasses are very scant. The clover will pasture three head of cattle to the acre in nice shape.

The soil, although relatively new, has been "grained" to depletion and sweet clover quickly increases the crop averages. With seed prices good, there is also an added revenue from that source. No liming is needed. The soil is sweet and thorough seeding will give a good clover stand.

From Campbell, we went over to North Dakota, into that land which has been pictured as reveling in sweet clover. It is just as scattered and patchy there, however, as we had found it elsewhere, but its spread is rapid.

The opinion of those in the best position to know is that the clover has come to stay, but there are farmers enough who have tried it and given it up to make it evident that there is bound to be a great deal of change in acreage. In a section where clover abounds this year there may be only a small number of fields next year.

There is a factor in the Dakotas, however, which lends itself to the development of wonderful beekeeping locations. It has been a country of large land owners. Many of the larger farms are now split up and have passed on to smaller operators, but there are still a number of huge



Large, double brood chambered hives, with two queens, as used by S. F. Lawrence, at Dwight, North Dakota.

places left, of from one to three or four thousand acres.

Some of these are run by a tenant system, some by individual management. The owners have a great interest in sweet clover. It gives them bigger crops and they can handle the seed to their advantage.

Amenia, North Dakota, where the Chaffee farms are located, has become a sort of headquarters for the sweet clover development. This is largely due to the interest of Willis L. Crites, who is located there. Crites is a thorough-going promoter, but soberly interested in North Dakota's progress. He is a dealer in seed, so there is an advantage to him in promoting clover acreage. That is not against him, but rather in his favor, and he has done as much as any one man to put the sweet clover idea across, especially to the larger land owners.

Not only has he interested them in the soil value of the clover, but also in the possibilities it offers for honey production. With several hundred colonies of bees of his own around Amenia, he is in a position to demonstrate the practicality of his preaching.

So bees as well as clover are finding a place on these larger farms. The most conspicuous examples of the success of such a venture were at the Smith Brothers', at Amenia, and at the Andrews Brothers', at Mapleton. The Smith boys have seeded nearly their entire place to sweet clover and manage the clipping and seed crop so that bees have a very long honeyflow.

The apiary is a beauty and is being increased as fast as possible. I have never seen finer equipment nor a more complete and modern honey house. The bee cellar is a model. These boys mean business.

The largest venture by far in the state is that of M. C. Tanquary and W. O. Victor at Chaffee. They own no land, but have about 1200 to 1400 colonies of bees on a big estate whose owners are anxious for the bees because of the much greater seed production which cross pollenization gives them. It is an ideal arrangement and probably is the peak of beekeeping possibility in the Dakotas. Our trip ended there.

Those seeking a beekeeping "Eldorado" in this new sweet clover country will find it a task much less easy than distant consideration shows. There is an ebb and flow in the clover acreage which is difficult to follow by those not on the ground. No seeding report can be reliable, except for totals, and it fails to give any fair estimate of possible beekeeping locations.

This fluctuation must be expected where sentiment is still so divided, for and against the value of clover. It makes locating uncertain, and until conditions are more established this uncertainty will continue to be the largest factor to be considered in the increase of beekeeping in this region.

The Engle Hive Lifter

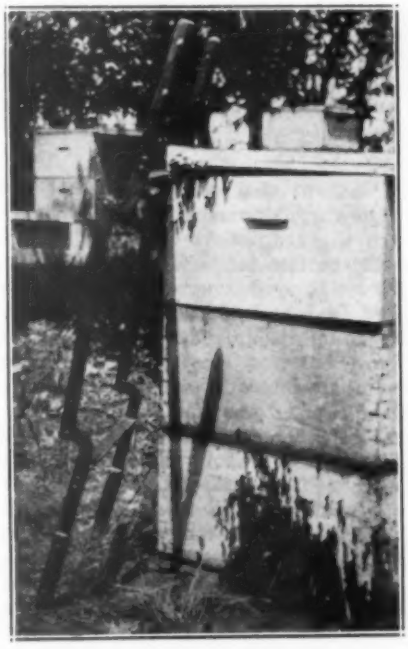
Two men can lift three full bodies and call it easy.

For simplicity and efficiency this tool is the best of its kind that we have ever seen. It can be used to lift the hives and supers, individually or together, from one location to aother. When the hives are piled high with full supers it saves a back-breaking job. Two men are needed to handle it.

The details may perhaps be seen in the smaller picture. When the lifter is placed about the hive, an upward pull on the handles sets the cross bars into the wood, giving the tool a tight grasp. The greater the weight the firmer the grasp.

We are indebted to C. S. Engle, of Sioux City, Iowa, for permission to show the device and any beekeeper can make one for himself or have it made locally.

This device makes the lifting of a heavy load much lighter. Two can move a weight, which, if divided between hem, would be almost too heavy. Most lifters are insecure, but this one certainly had a bull-dog grip.



The Engle lifter set out where you can see how it is made.

Personal Recollections of the Editor

Outapiaries and Transporting Bees—I

THE first outapiary that we ever had was located about five miles from our home yard and established in 1872. It consisted of only about 40 colonies. It was not located in a very good situation, being in a slope to the north, where the colonies did not get much sunshine in the late fall, winter and early spring. After two or three years, we moved it to another location, which was not very much better, as the latter place was at the bluffs, where the Mississippi runs between hills, without any lowlands adjoining. We did not appreciate the fact that the river was cutting half of its range, until we established a second outapiary, with much better results, in a slope of the prairie, about five miles from the river, where lowlands and pastures gave us both a June crop of clover and a crop of fall blossoms. One learns by more or less expensive experience,

But the worst feature of the river shore apiary was in being located in the vicinity of a number of small fruit farms, where each farmer had from half an acre to two acres of grapes. One or two short crops of fruit caused the grapes to be much damaged by birds, the bees following the birds on the punctured berries. The worst season of this kind was that of 1879, which caused us to plant a large vineyard at our home farm, to prove to the neighbors that bees and grapes could be kept successfully together. We succeeded in this completely, so much so that we stopped all criticism from that time on, but we could not do this at an outapiary where the land did not belong to us. So we decided to move it.

Just at that time, or rather the following summer, while a drought cut the crop short on the hills, the wide bottom lands of the Mississippi, 20 miles south, were covered in May and June by a big flood. The waters receding in July left the lands of those bottoms bare of any crop, but with an immediate and exceedingly luxuriant growth of persicarias, Spanish needles, iron weeds and other fall flowers good for honey. By the middle of August (this was in 1880) the wild plants that had grown after the receding of the waters were so high that one could hardly see the backs of a team of horses, driving through the fields that should have been corn fields or wheat stubble fields. The wheat and corn had been drowned out. I gave a statement of this in the October, 1880, number of the American Bee Journal, page 488.

Let me say in passing that this condition of the Mississippi lowlands has been fully remedied, to the benefit of the farmer, by the building of levees such as they have in the State of Louisiana. They were just beginning to build them then, but not sufficiently to keep the water off. At the present time, the lands then furnishing thousands of acres of fall bloom supply only immense fields of corn, wheat and oats.

The hills were so dry, that summer, that many of the farmers had cut their corn in August. The colonies had no honey at all and very little brood, an excellent condition to move them safely. We went to work and moved 115 colonies to two different spots on the bottoms, about two miles from the bluffs and an equal distance from the river.

One would think that, in the hot weather of August, it would be necessary to give a great deal of ventilation. But we contented ourselves with closing up the hives, establishing two small ventilators and giving the bees the entire range of the supers which had only empty combs in them. But the moving was all done at night and early morning. We would begin closing the hives about 8 o'clock, after the bees had all returned from the field. By midnight they would all be loaded on the hayracks, 20 to a rack, and the start made. We used three racks, so that we could move 60 large Dadant hives at one trip. The combs being old and more or less sticky with propolis, there was no need of fastening them down. The distance was 22 miles.

On the first trip, near the arrival at the intended apiary, between 9 and 10 o'clock a. m., the water of the overflow had left a bad crossing of the road, in a small slough. The first wagon had so much trouble in getting through that we hesitated to risk the other two in the same spot. A neighbor suggested to us that we could take a private road across his field and avoid the mudhole. We did. But our hives had their bottom boards projecting beyond the edge of the racks at each side, so that, when we came to the gate between the two farms, within 200 yards of the goal, we found that the gate was wide enough for the racks, but not wide enough for the added width of the bottom board projections. What to do? We had neither ax nor spade and could not afford to run a quarter of a mile to the farm house. Neither could we spare the time to unload and load up again. So one man led the horses slowly, while the other two men, one on each side, lifted the hives, one after another, over the obstruction of the posts. We got through, but not without letting some of the bees escape. Luckily, they were so tired, at the end of their 22-mile ride, that not one of them offered to sting either the horses or the men.

Within ten minutes of that experience, we had the wagons at the yard, the horses unhitched, and we were unloading the hives and freeing the bees as fast as we could.

Imagine what must have been the feelings of those bees, which had been roaming over dried hills, to find themselves in a paradise of blossoms! Within a quarter of an hour after the unloading, the blossoms all over the vicinity were covered with eager bees, and within a very few minutes more, bees were coming in loaded with pollen and honey. I am quite sure that, if we could have had some experimenter there, he would have found a great many more than 32 trips to the field as the average work of a bee's life. It might have been, perhaps, three or four times as many. The colonies were right in the midst of the fields of flowers and they had the incentive caused by the wonderful excitement of finding themselves suddenly transported from famine to profusion.

Anyhow, I believe that when colonies are transported to new fields they gain a sort of eagerness, perhaps caused by the requirement of learning a new field. Some other beekeepers who have transported bees from one locality to another agree with me in saying that their bees appear more industrious, more eager, more successful when taken to a new location. Perhaps it is all imagination and they are only more eager when the field is better.

This establishing of bees on the lowlands, in the middle of the summer, was quite interesting and exciting, but we had a second flurry coming, when we had to move them away from a flood in the spring of 1881. I will tell that in another number. I will conclude this by stating that we had a good crop of honey and wintered our colonies there successfully. We were well repaid for our trouble in moving them, though I should hesitate to do it again at such a risky time of the year, unless better prepared than we were then.

The Origin of Swarming

PART III

The Specialization of the Mating Flight and Swarming Flight of the Honeybee

By John H. Lovell.

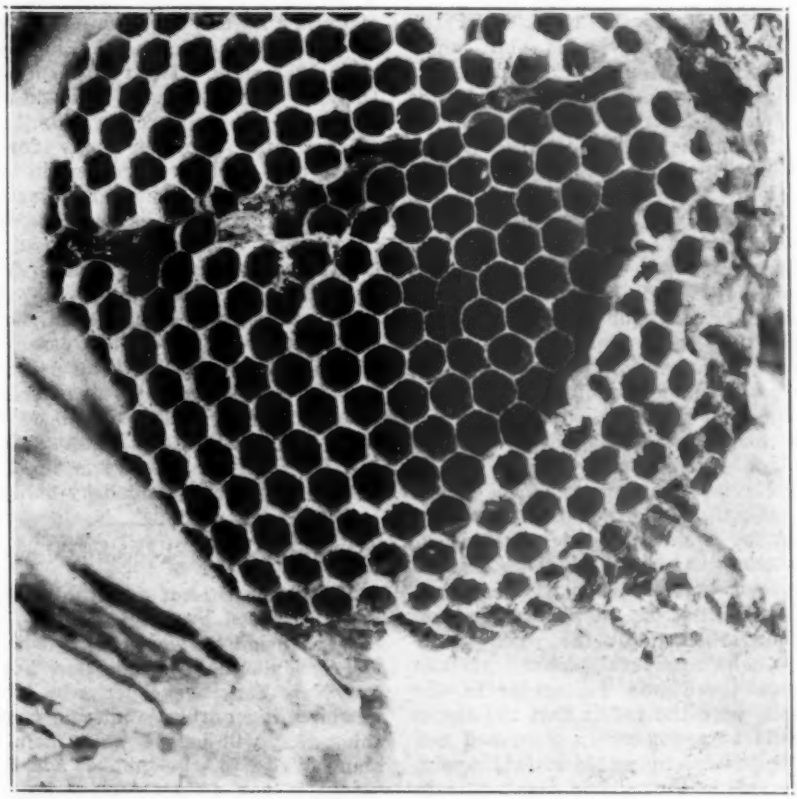
IT would be as fatal and short-sighted a conclusion to suppose that the societies of animals and plants have had no past history as it would be to suppose that the different human races have always had the same political and economic governments. While any attempt to reconstruct the past history of the honeybee colony must of necessity be partly hypothetical, it is nevertheless possible to follow in a general way the early stages through which it has passed. The commune of the honeybee is a very highly specialized insect society. It is difficult to see how any further progress is possible. "This little world of bees," says Dallas Lore Sharpe, "is in theory finished, in fashion perfect, in practice fatal to worker, drone and queen. As a political system we look in vain for weakness or defect. But the sacrifice of the individual is desperate, terrible, demanding slavery, immolation and death. No bee escapes." But perfection is one of the long results of time. It is not achieved in one year, nor in a thousand years. Let us then attempt to trace the development of the nuptial flight and the swarm-flight of the honeybee.

The original home of the honeybee was probably tropical India or southeastern Asia, since the other three of the four described species of **Apis** occur in this region. The warm climate permitted even primitive societies of insects to become perennial. Very likely the comb was at first built in the open air, a single semicircular comb being suspended to the under side of a branch of a tree, as is still the practice of **Apis dorsata** and **A. florea.** Occasionally a swarm of honeybees builds combs today in the open air even in temperate regions, although the bees must perish during the winter. A swarm of Italian bees from my apiary built several combs in a bush honeysuckle, which escaped attention until the falling of the leaves in autumn. Recourse was had later to hollow trees and rocky caverns because of the greater protection they afforded.

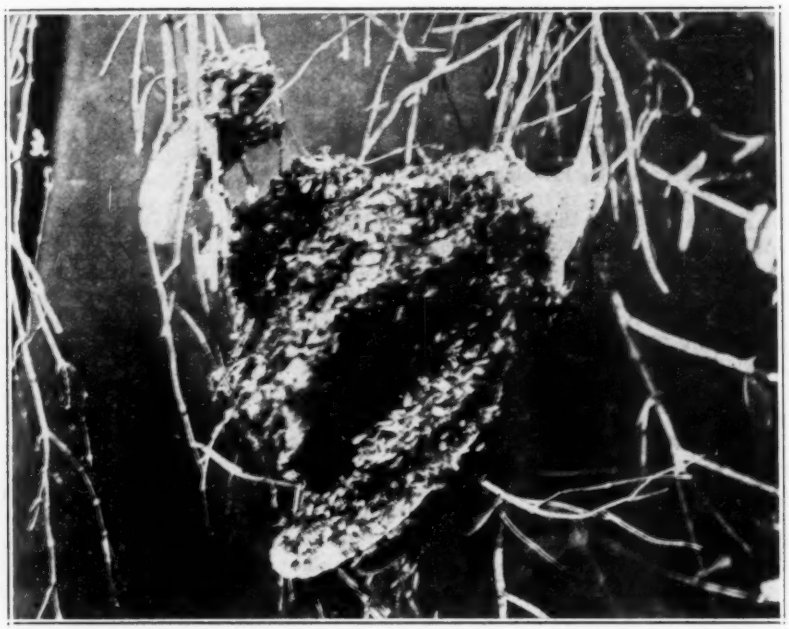
Latham suggests in his article (April, 1923, p. 178) that at this remote period the nuptial flight consisted of many drones and virgin queens, to the production of which the energies of the colony had been devoted for weeks. It resembled the nuptial flight of the ants. No swarm then, he believes, went out with the old queen. After mating each queen may have begun the founding of a new colony, as do the fecundated queens of the termites, ants, bumblebees and wasps. The queen was not then a highly specialized egg-laying machine; she was able to secrete wax, to gather nectar and to feed herself and her brood; pollen baskets enabled her to bring home pollen for the young bees. The virgins and the old queen or queens lived peacefully together, without seeking to destroy each other, as in the ant-nest and bumblebee nest to-day.

What was the factor or agency which reduced the nuptial flight from a host of males and females to a single virgin followed by a few drones? How came it to pass that the swarm-flight became a necessity for the continuation of the species? What awakened the fierce rivalry to the death between the reigning queen and the virgin newly emerging from her cell? These changes were not the result of chance; they had a definite cause. And it was this cause, the most momentous in the history of the commune, which determined its whole after-history, as well as its present status. We reply: It was the specialization of the queen into an egg-laying machine; her dedication to the production of life; her elevation to be the hive mother, the begetter of every member of the colony.

As the queens became more prolific a smaller number were produced. This permitted an increase in the number of workers, conserved the energies of the colony, and increased the quantity of food stored. Previously the resources of the colony had been largely exhausted in raising so great a number of males and females. The specialization of the queen was attended by the loss of the brushes and pollen-baskets on the hind legs, the glands for the production of wax, the ability to feed herself and her brood, and many other minor modifications. Intensive feeding was necessary in order to produce eggs by the thou-



Comb of yellow-jacket wasp or hornet. The combs are horizontal, suspended one above the other. Each consists of a single layer of cells.



Combs covered by a swarm of Italian bees built in a bush honeysuckle. It was impossible for the swarm to survive the winter in southern Maine.

sands; and the feeding and guiding of the queen by a small company of workers saved both time and effort. Both physically and mentally she was adapted to egg production, while her life was greatly lengthened. It was no longer possible for her to establish a new colony, and after the mating flight she was compelled to return to the nest. It has been shown in Part II that many fecundated ant-queens return to the nest, and also temporarily some mated bumblebee queens. The nuptial flight no longer served for dispersion—it provided only for fecundation.

But long before this stage was reached in the history of the colony natural swarming had become a more or less frequent occurrence. As the result of over-population and the evils attending it, which would vary according to where and how the nest was built, companies of workers with one or more queens had gone forth to establish new colonies. In the beginning the swarm-flight was largely optional, but with the return of the mated queens to the nest it became a necessity for the perpetuation of the species. Colonies which failed to swarm presently disappeared and left no descendants. Swarming thus became an inherited habit, an instinct. The stimulus came and still comes from an over-crowded condition of the hive, as is shown by the fact that colonies run for extracted honey swarm less than those employed for the production of comb honey. But once this instinct is awakened it is difficult, almost impossible, to check its action. All the forces which work for the welfare of the species, rather than for the individual, favor it. The swarming instinct has thus become very powerful, perhaps surpassed by no other instinct in the life-history of the honeybee. Its momentum may carry it to extremes, even to the sacrifice of the colony, as at times happens in after-swarming. It is not a sex-flight; it is a dispersion flight. Its purpose is not the increase of the number of individuals, but their wider distribution. The swarm leaves the nest with no intention of ever returning to it; and unless the absence of the queen compels its return, the old home is speedily forgotten.

As soon as the specialization of the queen as an egg-laying machine approached perfection and she became capable of laying 1200 to 2000 eggs per day, or under favorable conditions a greater number, it became an advantage for the colony to have only one queen. Colonies, which had more, failed in the struggle for life and disappeared. While it might be an advantage for a colony to have two or more queens during the height of the honeyflow and for a short period preceding it, in order that there might be a great force of workers, yet if there were a plurality of highly specialized queens throughout the year, there would be a superabundance of bees when there was no nectar in the fields, with the result that the stores would be prematurely consumed and later the colony would starve. Again, odor plays a very important part in the hive economy, and of all odors, as Buttel-Reepen has pointed out, queen odor is the most important. If there were several queens possessing different odors, the manifestations of this economy might be seriously disturbed. In other ways the presence of several queens would obviously interfere with conditions in the hive.

While it is an advantage for a colony to have only one queen, it is compelled to raise a small number of virgins every year, from two to twelve or more, in order to meet the requirements of swarming or supersedure. Only one of these queens can finally survive in the nest or hive. It is inevitable, therefore, that a deadly rivalry should arise between them. A queen must either destroy her rivals or leave the hive. If the old queen remained in the hive she would almost certainly be killed by the more vigorous virgin which first emerged from her cell. She instinctively recognizes her danger, and would promptly assassinate her daughters were she not prevented by the workers. Thwarted in this attempt, fear causes her to depart with the prime swarm. The prime swarm departs a few days earlier because of her presence; but, if she is accidentally killed or removed, it issues a little later with the first virgin to appear.

If there are to be no after-swarms the new queen on her return from her mating flight promptly becomes a sororicide. If she failed to destroy her sisters, her own life would be repeatedly endangered. She must slay or be slain. The reciprocal hostility of queens has its basis in the instinct of self-preservation. A mother and daughter may for a brief period live together in the same hive; but the mother is usually so feeble that she does not endanger the safety of the daughter, and in a little while she disappears. The workers themselves recognize the stern necessity of allowing only one queen to live, since they cease to protect the virgins if they are not needed, and permit them to be scimitared in their cells. In cases of supersedure, where the old queen has not departed with the swarm, her life may be relentlessly ended by balling.

New York Beekeeping News

This is the title of a monthly news bulletin edited by R. B. Willson, of the Extension Service of the College of Agriculture, Ithaca, New York. The New York beekeeper who does not have it monthly is missing something that will be of great help to him. Write to the above address, surely, if you do not receive it, and have your name put on the mailing list. The Bulletin is free.

Ants That Infest Beehives

By A. C. Burrill.

THE spring and fore part of the summer of 1922 were quite wet and created an unusual flood on the Mississippi River before the rain let up. Never in my previous experience were various species of ants found so commonly in beehives. In some apiaries from 50 to 90 per cent of all the hives had ants in them.

In contrast to 1922, the spring of 1923 was fairly warm and quite dry up to the middle of May, and the hives then examined seldom exceeded 50 per cent infested with ants. It is commonly stated by the beekeepers, and I have said it myself, that the ants are up there for warmth and to get their tender brood, both young and old larvæ and even the pupæ, or cocoons, away from the damp ground. One can see ants in dozens of beehives where no other explanation seems to fit the situation.

Ants as the Bees' Rats and Mice

The ants are not found anywhere on the bees' combs, rarely all over the bottom of the hive, and seldom between the division board and the hive walls. In some old styles of brood chambers, the top bars of each frame, whether movable or not, are often so close to the roof that a bee cannot go between. In this case, the ants take possession of part of the top bar and the bees wall them in each side with propolis as far as they can reach. In some hives I have seen six or eight top bars packed with ants and with irregular projections of propolis from an inch to a half inch apart with a snug pile of brood and ants moving about between these propolis walls trailing out some crack at the back of the hive, going elsewhere for food. Ants love the wider plaster lath top bars improvised often by farm beekeepers. The older beekeepers agree that the very rainy spring was responsible for making so many ants leave their ground nests and move up into the bee-heated apartments above the brood chambers.

Are Bees Nervous About Ants?

In 1921, at the hospitable southern mansion of the Compton's, near Liberty, Clay County, Missouri, Mr. C. P. Dadant and I were guests over night following the convention, and on arising early next morning, found Miss Emily already out in her bee yard, whither we went to learn what we might of her bees. We were attracted by the bees in large numbers carrying on a dancing motion at the front and side of the hive, which I was pleased to call the young bees' minuet, and was later discussed in short articles in the Bee Journal. It seems this same activity, which might have been for the purpose of "brushing their teeth," or for polishing the threshold and sides of the hive so as to weatherproof it for winter, had been noticed in various parts of Mississippi River states that fall. It was very evident that the bees were neither walking in their sleep nor mentally asleep in this activity when the following act was observed: A small brown ant (**Lasius niger americanus**) known as the corn louse ant, crawled onto the threshold from the under side of the hive alighting board and made tracks to go in at the left front edge, where there was a crack between the entry block and the side edge. A worker bee immediately followed the ant, stopping her "propolis dance" to do so. She carefully felt all around the crack but could not get in where the ant went. This leads me to believe that the bees are keenly alive to the presence of the little sojourners among them.

In most cases where ants enter the beehive, they do not go into the front door, but through some crack or seam at sides or back, or at some point on a loose-fitting hive cover, roof or super.

Wood Ants Chop Up Hive Fittings

At Dexter, Mo., a progressive beekeeper with modern hives and pedigreed queenbees, told me about the raid the big wood black ants (**Camponotus herculeanus pennsylvanicus**) made on his bees. They raided two of his young colonies situated in a grove of old trees where the ants live under the bark of the trees. He told about their having made complete havoc of the frames, combs and part of the hive body so that it was too rickety to keep out bad weather.

Later, at the 1922 summer session of the State Beekeepers' Association at Trenton, Grundy County, Miss Emily Compton gave me a first-hand account of the wreck this same kind of ants made of one of her supers. She had not previously known that these ants work in greater numbers at night time than they do by day. It seems that she first noticed a thin trail of these big black ants going across the ground between her apiary and one of the big trees on her estate and did not at first realize that they were going to one of her hives.

The next morning, Sunday, she discovered that she had left the bee excluder on twenty-four hours too long and was horrified to see a heavy black trail of these ants crossing toward the beehives. She found the super swarming with black ants. Then she investigated the super which had many sections capped with surplus honey and found that these big ants were breaking in the sealed cappings and wriggling into the honey cells getting all the honey. She noticed that they had attacked one side of two or three comb sections only and that the other side of the same sections did not have the caps perforated, so she brushed them off and stirred up the bees below that they might take better guard of their stores. It seems that the bees had practically deserted the supers for their night sleep and the bee escape on for twenty-four hours, left the ants in complete supremacy upstairs.

Miss Compton investigated further and was troubled to find that three or four of the supers comb sections had been emptied without breaking through the caps on the side of the comb opposite the cells first entered. Several of the comb-honey section wooden boxes had been gnawed so badly that they fell apart on lifting them. The bees below seemed to be completely cowed by the swarms of black ants in the upper story and were acting as if they might be ready to leave the hive.

Ant Most Common in Hives Not Worst-Behaved

Strange to say, up to this experience only the big, black carpenter ant had so far been incriminated in Missouri as seriously harmful and this ant is comparatively rare in hives. The most common of all the ants found in the hives was the little tip-up tail (**Cremastogaster lineolata**). About 50 per cent of all the ants found in beehives in Missouri proved to be of this **lineolata** species, in 1922. It seems to be the species that was the most common. This kind has never been proved dangerous to bees. It is noted as one which will move its young from unfavorable situations on the shortest notice. For this reason, I have made the conclusion that they seek warmth only, and a dry place for the brood.

Ants Move to New Hive Locations in Wet Weather

At the apiary of D. M. Gregg, at Harrisonville, Mo., May 24, 1923, I examined nine stands of bees which had been moved about five weeks before from winter packing quarters outdoors to their summer stands.

Four out of the nine stands in the new location now had ants on the inner covers, or between them and the outer roof cover; or, between the inner cover and the propolised borders of the areas of top bars. Two of the hives infested had the **C. lineolata** variety, together with their larvæ, but no pupæ. One hive had a small blackish brown **Lasius** which went in files similar to our common **Prenolepsis,** but there were no young present. In this case the ants came out, down the front edge of the hive, but did not cross the middle part of the alighting-board, so the bees did not seem to pay any attention. But the ants were in plain sight, if the bees' vision is of any account.

Many other places where the bees did not seem to pay attention might be given. The ants, doubtless, were going to colonies of plant lice in the orchard or grasslands, one might suppose, if it had not been for the observation that they had no young with them. This led me to be suspicious that they had a nearer source of food; that they might be getting into the honey. The fourth hive had a larger reddish ant **(Formica)** with a blackish, clouded abdomen. This was on the inner cover next the roof where they had hundreds of larvæ of all sizes scattered around somewhat more carelessly than usual. Perhaps this scattering of brood was due to rooms like an underground nest, but only one big roof space. Yet it could be seen that some of the larvæ were grouped in piles, those of a given pile pretty nearly of a size. Mr. Gregg reports that it had been raining or cold for a month by spells, interspersed by a week of hot weather.

Black Ants Climb Three Stories to Rob Honey

On May 25, Donald C. Pharis, Secretary of the Cass County Beekeepers' Association, went with me to examine several apiaries where we also found a few ants, and on May 26 went to see how his colony was doing, on the third floor of the high school building in the vocational agriculture rooms, where the bees had been kept over winter. In the fall the hive had been placed on a metal fire escape where ants had not bothered them. In the summer they were rigged on a window sill and propped so the hive would not upset. It was soon to be noticed that the common black ants **(Formica fusca subsericea)** were climbing up the woodbine vines or ivy, and along the window sill and into the hive. These bees were peaceable Italians and the ants were peaceable black tenants or transients going into the hive at the main entrance over the alighting-board without being molested. Six frames of this ten-frame hive were full of these gentle bees and they did not seem to notice the ants, which Mr. Pharis said had been invading the hive for over a month, or throughout the cloudy period since warmer weather first came. So long a period of invasion, probably harmonized the colony odors of both bees and ants so they could no longer recognize each other distinctly as strangers or enemies.

Black Ants Chip Ragged Holes in Capped Cells

We saw with our own eyes for the first time, how these ants eat irregular holes into the capped honey cells on the first and second outer frames on each side of the brood chamber, making four frames in all, which were being attacked in this hive right next to the bees. The ants were coming in at the rate of one every half minute and the bees were going in at the rate of twenty to thirty every half minute. Thus, as this ant can carry about as much honey as a bee, they were robbing one-thirtieth of the colony's work and, allowing for pollen-carrying bees, etc., perhaps one-fifteenth of the colony's day's work, or 7 per cent, and if these ants continued at night, perhaps a steal of 15 per cent of all nectar the colony could gather in twenty-four hours. These black ants may not work harder by night than do carpenter blacks, noted above. If so, 15 per cent is too high an estimate. It was 9 o'clock in the morning and warm, and indicated a speed of changing workers at 120 ants per hour. We pulled out frames of honey that had not been capped but either had cells emptied or were being ripened and were less than half full with fresh nectar, the worker black ant pilfering the cells in many cases.

The worker often reached in so far that only the last third or half of her rear legs stuck out. This was just enough so any bee passing by would give warning in brushing against her legs for the ant to hurry out of there. But did they? With my pencil I brushed the tips of the rear toes of such an ant, which only moved deeper into the cell to avoid collision. Then I knocked her intentionally and she backed out very unwillingly and we had to blow her violently off the comb to make her run. Several times repeated gave like results with other ants.

Do Ants Gnaw Down the Comb?

In several cases the holes in the cap of a honey cell had been gnawed out irregularly with a hole reaching to at least one side of the hexagon edge, so that there could be no mistake made as between this damage and the small puncture made by foulbrood. These ants made holes larger than the average foulbrood puncture by twice, generally, and are seldom as exactly centered as foulbrood breaks. With a hand lens the evidence of gnawing could be seen. At the present time there seems to be no incriminating evidence that the corn louse ant **(L. n. am.)** series or the tip-up tail ant **(Cre. lin.)** series attack honeycomb to extract honey, or nectar, as do the black ants, yet these are the ants in 70 per cent of the infested hives.

Others Like Honey

In Milwaukee, Wis., a corn louse ant trail climbed through the cellar wall into the basement, up the furnace wall and into the furnace fire pot to lick clean the empty wooden sections of comb honey that a previous tenant had stuffed in with old paper and failed to burn. There is little question but that most of our common ants will eat honey if they have a shortage of food, and some are particularly fond of it at all times. Yet, over 60 per cent of the known ant species in Missouri, I have never discovered in hives. However, not all specimens of ants in a given district are apt to be found in hives in the same season. This leads to the question, do the ants have a habit of staying away from the less gentle bee colonies' quarters until evening when, if it is chilly, the bees concentrate in a cluster over the brood, leaving the honey supers unguarded? Many ants do more work at night than in daytime, but there seems to be very little information as to relative proportions of day and night activity of ants or about which ants might work in the beehives more at night. Perhaps more black ant species will work on the colder nights than any other kinds of ants noted, and blacks may be designated at present as the more dangerous to apiaries in Missouri.

Rough-Shod Controls

Over one hundred ways of fighting ants occur in the literature, few with a scientific O. K. from experiment stations. Some beekeepers dump the ants and their broods into the grass or to the chickens whenever they find them and let the ants shift for themselves. One beekeeper used powdered borax on the inner cover, which destroyed the ants and discouraged the rest from trying to stay there. Another beekeeper proposes to dust the inner cover with sodium flouride. All these chemicals will hurt the ants, but are poisonous to bees if they fall down

into the honey or in the brood chamber in any quantity. Other beekeepers use vaseline, axle greases, or cups of oil surrounding the legs of the stand to keep the ants from climbing in. Federal and State Governments have carried out the most extensive investigations with regard to keeping the Argentine and **(Iridomyrmex humilis)** out of beehives. But this tyrant of an ant is not yet in Missouri, it is said, although it is apt to arrive by river steamer in southeast Missouri most any time.

There is a great deal more in the way of experiment that can be done to use the things that are harmless to bees, that are not malodorous or repellant to them, but will repel ants. These notes must be treated only as a preliminary report and are open to much criticism and much further observations. I have not attempted to compile the hundred mines of good information about keeping ants out of beehives as can be found by a perusal of the files and annual index of the American Bee Journal and Gleanings in Bee Culture. Where one ant colony is so populous as to visit many hives, the spreading of foulbrood germs, mold spores, fire blight germs, yeast, mites, and other bacteria and bee pests ought to be easily investigated where one is fortunately situated. This ant activity to spread germs is worse in wet spring seasons when fire blight germs spread the most seriously, as in 1922 and 1923 blight epidemic.

Bee Fiction

By Stephen J. Harmeling.

Lots of bee fiction comes to our desk from all parts of the country, in all kinds of publications, but the neatest bit of fiction we have seen lately was written by Gene Stratton-Porter in McCall's magazine. Poor Gene, like many thousands of others, the auto killed her. I see from ads in the papers that her bee stories are to be published in book form with prospect of a big demand.

Somewhere in my library is a little book entitled "The Blessed Bees." I do not now remember who the author was, but it is a very clearly written bee story, an hyperbole for that time, about forty years ago, I think. It started many into the beekeeping game and no doubt many made a complete fizzle of it.*

Many years ago an artist of renown in New York City painted a life-sized picture of a pheasant. Everybody said, "How beautiful!" One day Audubon was called in to see it. "A beautiful bird," he said, "but it is not a pheasant. It has one too many rows of scales on its legs and feet" You see Audubon really knew birds. The artist had made a guess at it.

Gene Stratton-Porter's bee story will be appreciated by all, except those who really know bees and know how to keep them. The publishers do not care a snap of the finger for the authenticity of the subject matter. Entertainment and not instruction, is what they want.

There is a very big difference between fiction and facts, between theory and practice, between idealism and realism. Still, all this fiction sets people to thinking and experimenting. Some will lose money, get stung and then quit. Some women will say, "Well, if Gene can write about the game in this way, I can try out the game, will persevere, get better information and succeed.

It is not so bad in its consequences as the Government survey in South Dakota in the Seventies. The story says that the surveyors performed their work by tying a rag to the spoke of the wheel, counting the revolutions and booking them as they drove over the prairies with a team of bronchos and a pocket compass and a whisky bottle in the buggy. I was on the ground when these original lines on which the patents were granted were straightened out. The new lines often ran through the middle of the homesteader's house or barn. It was a terrible condition, mixed with some gun play. If I remember correctly it took Uncle Sam and the legislature to fix up the mess.

No, it is not so bad, after all. There is a streak of humor in most of us. Gene's bee story, Zane's stuff, Chauncy's gunplay in the winning of the West, the wonderful big game stories of the mighty hunters up and down the West Coast, the 600 and 700-pound colonies, all these pretty hyperboles beautifully and innocently told, tickle us. Yes, we like humor. Yes, Charley, dear, for real humorous whoppers, you have to hand it to this far West.

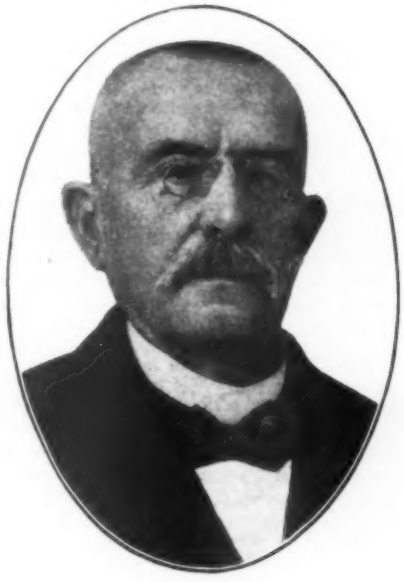
*("The Blessed Bees" was written by Oscar Clute, a Unitarian minister, under the nom-de-plume of John Allen, in 1879. He was not trying to draw people into beekeeping, but simply wanted to show the possibilities of beekeeping. We were well acquainted with him.—Editor.)

A Noted Algerian Apiarist

In our June number we quoted the information given us by Mr. Bernard, treasurer of the Algerian Beekeepers' Association, on the subject of the old-time smokers or "fakrouns" of the Arabs. Mr. Bernard is a very eager student of beekeeping.

We have just received a letter from Mrs. A. McClanahan, of Blida, Algeria. The McClanahans praise Mr. Bernard highly and send us interesting information concerning him. We have known Mr. Bernard for some 25 years and can fully endorse the following:

Antoine Bernard was born in Algiers, of French parents, some 76 years ago. While he was at college and hardly grown up, a swarm of bees settled in an olive tree; he attempted to hive it; he did not succeed, but the bees did not sting him, although the bees of Algiers are of very irritable disposition. He already had that ability to control bees which is quite noticeable in some people. Later, while finishing his education in a Paris college, he followed the beekeeping courses of Hamet in the Luxemburg Garden and became a practical beekeeper. He was for many years of his life general superintendent of the railroads of Algeria, and kept bees constantly. In 1885, Dr. Reisser founded the Algerian Beekeepers' Association which Mr. Bernard has successfully fostered since the death of the founder. He lives in a pretty home near the city of Algiers, where he keeps the famous Magribine bees, which are similar in color to the Cyprian. These bees are comparatively new to the apiarian world, for they have only been mentioned and imported since 1912, by Messrs. Regnier and Baldensperger, in addition to Mr. Bernard. He tells us that most of the bees he has are of impure blood, but he expects to try the pure ones again.



Antoine Bernard.

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

PAINTING HONEY TANK

What would be the result of painting the inside of honey tanks, which have started to rust, with aluminum paint, or with white enamel or other suitable paints? Will such paints "stay put" inside the tanks when filled with honey? Will the paints have a detrimental effect on the honey?

This remark applies only to such paints as are known. Of course there are numerous paints which would not be practical to use at all. How about the sex of white enamel to use in painting inside of wooden tanks in which honey is to be placed later? NEBRASKA.

Answer.—Here is a good place to give you the reply that Dr. Miller used to make to difficult questions. "I don't know." But Dr. Miller always did suggest some sort of reply, even after saying that. I must now try to do the same.

I believe there is a difference in honeys that might cause a difference in results. Some honeys contain considerable ferment, which might act upon enamel, while some others would not.

I have no experience with the aluminum paint. I am a little better acquainted with enamel, but not enough to make positive reply. As the time for storing honey is now past, you have plenty of time to make experiments. Why not try to paint the inside of some small rusty cans with either of these compounds, let it dry well, then fill them with honey. It would cost next to nothing to make this test and by next summer you would be better informed than I can inform you. My preference would be for the enamel yet the other paint might really be better. If the paints are left intact by the presence of the honey, in say 3 months, there would be no danger. A similar reply may be given regarding wooden tanks.

SECOND-HAND CANS

Please favor me with your advice in regard to some honey I have bought. It was packed in rusty 60-lb. cans and I think is not in condition for my market, as I fear it contains rust, for the cans are very rusty inside. CHICAGO.

Answer.—If the honey has really acquired a color and flavor due to the rust, it will be impossible, in my opinion, to cure it of this trouble. But if it has not been long in those cans it may be drawn out before it gets any bad flavor. In the latter case I would draw it out as soon as possible, cold, then heat the cans to get the balance of the honey out. The part that adheres to the rusty tin will be sure to have a rusty taste, anyway.

The man who sold it to you ought to make good whatever loss you have to sustain.

I made the mistake to buy second-hand 60-lb tins once. They were guaranteed as good as new. But I did not use more than half a dozen of them. The others went to the old tin can pile. If I can give a warning word, I will say to all the readers of American Bee Journal: Don't handle second-hand tins, unless you find them entirely clean inside. And in any case, honey will sell for enough more in new tins to pay for buying them new.

SNOW AT ENTRANCES

In the outapiaries where the bees are wintered outdoors, as per Iowa method, is it necessary to go out and clean the snow from the entrance to the hives? I thought the bees might smother with the air outside shut off, but probably this will keep them warmer than where it is open so the air can enter the entrance. IOWA.

Answer.—If the snow falls in soft shape, and melts upon the entrance and freezes again, it may make the entrance airtight, but usually there is enough air through the cover, unless the latter is airtight, to enable the bees to breathe. The most important thing is to have the entrance free whenever the weather gets mild. For that reason we like to brush the snow away from the entrance before it has time to melt and freeze there.

If you read No. 3 of my accounts of the International Congress, in 1924, you may have read, page 14 of the January, 1925, number, that Mr. Tissot, near Ottawa, Canada, leaves his hives covered sometimes with as much as 4 feet of snow, all winter. This protects them, and the warmth of the bees coming out through the entrance melts the snow away so as to make tunnels in it.

If the snow is frozen into ice, at the front of your hives, just take advantage of a warm day to clean it away. But do not disturb the bees to clean it away unless it has clogged all openings tightly. Snow is an excellent cover for hives to protect them from the cold.

HONEY CRAMPS

I am in the honey business and selling direct to the consumers. I find a great many users cannot use honey as it does not agree with them, as it seems to give them cramps in the stomach or something similar to that. If you can give me some remedy that will do away with this trouble I would be much obliged and thankful to you. IOWA.

Answer.—Heating the honey sometimes changes the tendency it has to make some people sick. As a rule, those who are made sick by honey have eaten it the first time on a full stomach, when the stomach needed no more food. The peculiar difference between honey and the sugars is that you can eat a lot of sugar or candy when your stomach has all it can use and yet it does not sicken you. The bad effects come later, upon the system, and engender kidney troubles, slow to come, but hard to cure. If there are ill effects to honey they come at once by the stomach rejecting it. Let your customers try a very slight quantity at first on bread or toast. But there will always be some who will not be able to eat it.

BOILING HIVES AND SUPERS

About getting rid of germs of American foulbrood in supers and hives, I see in the Journal that someone burned up 1,500 supers to get rid of it. I have had some difficulty with it in my bees and have thought I might boil all hives and supers to get rid of it. I have a large scalding tank. Couldn't I submerge all hives and supers, frames, etc., and boil them for an hour or so at a great heat and destroy all germs of American or European foulbrood? Wouldn't it help if I add a good quantity of carbolic acid to the water? It would surely melt off all wax and propolis and clean up the hives all right, and I think destroy all germs; what think you? ILLINOIS.

Answer.—Boiling is recommended by all the experimenters for destroying the germs of foulbrood. At least 30 minutes at the boiling point of water is recommended by Dr. White, who was the original discoverer of the bacillus of foulbrood, Bacillus larvæ. The addition of carbolic acid would, of course, help to make it doubly sure. But I would recommend you do not use enough of it to give an odor to the wood, as it is quite objectionable to the bees. Carbolic acid is used in some parts of England, on a cloth to spread over the combs when you wish to open the hive and frighten the bees. Its odor is very much disliked by them.

We never burn up any hives or supers. They may be readily singed with a blow torch.

HONEY IN RADIATORS

Will you please tell me what percentage of honey and water for radiator use will stand different temperatures without freezing? Idaho.

Answer.—The best solution for radiators was given by Russell H. Kelty, of the Department of Entomology of Michigan, in the American Bee Journal for December, 1924, page 551.

For localities where the temperature does not fall much below zero, use half and half in bulk, honey and water.

Where the temperature goes down to 15 below zero, use three of honey to two of water. Where the temperature goes down to twenty below, use two of honey to one of water.

Add a little extra water, for the water that will evaporate in boiling, then boil your mixture. When removing it from the fire, add a quart of denatured alcohol to each three gallons of water. The mixture will then foam and the scum should be removed.

Do not overfill your radiator, for any honey water that runs over makes a sticky mess. The greatest danger is in the leakage of the gaskets, for a seepage of the solution will cause trouble. Some people use a little more alcohol and less honey, so that there is less danger of a leak. Honey water will leak more readily than pure water. The great advantage of honey in radiators is that it does not evaporate.

GUARDS FOR HIVES

I would like to have a little advice in regard to entrance guards for beehives. Are they of any advantage to any beekeeper? Do they hinder the progress of the bees? I have ten hives of bees and want to prevent swarming by not going through the hives every week. Would the entrance guards help out in this case?

I am a subscriber of the American Bee Journal and thought I would ask for some advice. PENNSYLVANIA.

Answer.—Entrance guards are kept by all dealers, because some people think they want them. But I always advise people against using them. They make the hive less easily ventilated, and although they actually confine the queen and drones within, they are a nuisance because the drones die inside, and because, if the bees want to swarm and the queen cannot follow, they will often kill her and try to swarm with a young queen.

The best method to prevent swarming is to have large hives, with plenty of room for the queen to lay and plenty of room for the bees to deposit honey. Then have

plenty of ventilation, plenty of shade, as few drones as possible, by taking out the drone-comb and giving them worker comb in its place; then keep only young queens not over two years old. You will have better success with this method than with any queen trap or entrance guard.

WINTERING IN SCREENED SHED

1. I have a one-story building about 12x20 feet with cement floor in which I have stored a quantity of dried hen manure and which has plenty of ventilation. I thought to screen the window openings with wire screen and leave out the glass for wintering three hives of the double-walled type so that the bees might get a limited flight at any time and not be in danger of dropping on snow and perishing, as they did last winter in the open. Is this practical?

2. Why is it advised, in placing an empty super on a hive, to put it below a filled super, and why not leave the filled super off altogether? NEW YORK.

Answers.—1. No, it is not practical. The bees will go to the screen and as many of them will die on it as might die on the snow. Besides, they would probably try to fly on days when they would not do so if they were in the open. If they are well protected on their summer stands, they will probably fly but little when there is snow on the ground. Throwing ashes or sawdust or leaves on the snow sometimes helps keep them from sinking in it.

2. The super is usually left on for two reasons: First, the bees are more eager to fill the space between the full super and the hive body than if their crop is entirely taken away; 2nd, the full super is often not quite finished. In fact it is better to put on the second super before the first one is entirely full.

DRIP FROM VENTILATOR

How can I prevent the ventilator in my bee cellar from dripping water. This goes to the bottom of the Cellar; it is a 4-inch galvanized pipe 30 feet long. It has a protected top, but it drops water constantly at the bottom. It is in a new cellar I have just completed. NEW YORK.

Answer.—The dripping of water from your cellar ventilator is certainly due to the fact that your cellar is new, the wall being "green" or still full of moisture. I believe that you will find this to stop after a few weeks. If you could put some heat into that pipe in some way, it would probably give a quicker ventilation and would cease dripping. But I am of opinion that it will cease before long.

LEAVING SUPER OF STORES

There is so much said about large hives; what do you think of the plan of leaving a super of honey on each hive all winter to make sure they will have enough stores. If you did would you raise that up when you put others on in the spring, or would you leave it where it is, the year around? I have left supers on all of them. NEW YORK.

Answer.—Yes, it will certainly be a safe thing to do, or at least to return the super if they are short of stores in spring. Put the others on top of this, in spring.

Honey Bran Muffins

Three tablespoonfuls of strained honey, two cupfuls of bran, one cupful of wheat flour, one pinch of salt, one and one-half cupfuls of buttermilk, one teaspoonful of soda. Mix the bran, flour and salt well together, add buttermilk in which soda has been dissolved; lastly add honey. Bake until well done, in greased gem pans in a hot oven.

Meetings and Events

Buckwheat Honey Crop a Bumper

The 1925 buckwheat honey crop is estimated by some of the oldest producers as the largest on record. More than half of this crop is still unsold and the price on the New York market has fallen sharply. There is a fair export demand this year, however, and before another summer there will come two more Jewish holiday seasons, when large quantities of this product will be consumed. One buyer is offering 6 cents a pound f. o. b. producer's shipping point, but most beekeepers are unwilling to sell at this price.

To prevent a large buckwheat carry over to next fall, producers should use every means to stimulate buying of this crop. A beekeeper in eastern New York recently found it profitable to use the classified columns of a Massachusetts paper to sell his buckwheat honey. New England towns, and cities in Pennsylvania offer a good field for such advertising, but not better, usually, than our own in New York. The names of the leading dailies in any city in this country will be sent to anyone on request to R. B. Willson, Ithaca, N. Y. —Beekeeping News of New York State.

In Wyoming—You, too, Brutus?

When Cæsar's "faithful friend" at the last turned against him, he exclaimed: "You, too, Brutus?" It was a cry of despair and it comes to mind every time we read of another case of price cuttting among honey producers. We read the following in the "Wyoming Beeline": "Professor C. A. Koepke, who, with Professor E. L. Sechrist, has established a commercial apiary on the Laramie Plains, attempted to sell some of his honey at the Midwest Cafe, Laramie, and was greeted with a knockout comeback to the tune of 5¾-cent honey from Colorado. If such is possibly true, we should like to call the attention of Colorado officers to the fact that there is an insane beekeeper running at large, and that all beekeepers would appreciate his committal to the proper institution. (But after all, isn't our present marketing system only a lesser degree of the same type of insanity?)

Good Honey Displays Always Get News Space

Every month we get clippings from newspapers giving a brief description and oftentimes a picture of a honey display held in connection with some show or fair. Here is one about the honey exhibit at the Arizona State Fair. It not only tells of the display but it also gives the names of the beekeepers and much added talk about honey.

Here is another from the Vancouver Daily Province, with a picture of a really fine exhibit, a prize exhibit, staged by J. H. Holt, of Newton. It gives Newton's beekeeping history and his success, and a sketch of beekeeping in the Province.

It all helps. It advertises honey; it advertises the beekeeper, right in his own home town. Such publicity is truly far reaching. It often seems hard work with no returns to make a display, but it is the best help oftentimes, that the individual beekeeper can give.

North Dakota Will Show 'em How—by Mail

If you live in North Dakota, or around the edges, and keep bees, it will pay you to get out a new pencil and pad and send to the Department of Correspondence Courses, Agricultural College, North Dakota, for the new course in beekeeping. It is prepared to give good practical facts for North Dakota conditions. Other subjects are given in the same way: poultry, fruits, vegetables and trees, forage crops, small grains, farm structures, farm management, introduction to marketing.

Application cards for enrollment will be sent on request. Instruction is free, but a fee of $2.50 for one course or $4.00 for two, is charged to cover costs of mailing and clerical work.

Fourth Annual Winter Course at University of Manitoba

We have just received the program from Professor A. V. Mitchener and it looks interesting. The dates are January 18-29, at the University, at Winnipeg. The subjects be covered are:

"Where Bees May be Kept in Western Canada," "Making a Start With Bees," "Planning the Apiary," "How to Handle Bees," "Seasonal Management," "Package Bees," "Swarm Control," "Honey Production," "Wintering," "Queen Rearing," "Marketing." That is pretty near beekeeping, from A to Z. Further information may be had from Professor Mitchener at the University.

Two Short Courses for California

The Extension Department of the University, at Berkeley, and the Extension Committee of the State Beekeepers' Association, co-operating, have planned two short courses to be

held in January. J. I. Hambleton, of the Bee Culture Office at Washington, D. C., will be there. One meeting is arranged for the northern part of the state and one for the southern. The state convention may also be held in connection with these courses. Details may be had by writing to Geo. H. Vansell, University Farm, Davis, Cal.

Canadian Honey Production Growing

The growing importance of honey production is very evident in the statement of Province of Manitoba Department of Agriculture that the total for 1924 reached 1,302,000 pounds, valued at $195,000. This amount was produced by 1,800 beekeepers with 22,113 colonies.—(Confectionery Foreign Trade News.)

New Officers of Alabama Association

At the state meeting in September the following were appointed as officers of the State Association for the present year: F. Allen, Catherine, Ala., President; Elbert Harrell, Secretary-Treasurer; Professor J. M. Roberson, Assistant Secretary; J. M. Cutts, J. Knight, M. C. Berry, and S. E. Merrill, Vice-Presidents.

Manitoba Beekeepers' Convention

The annual two-day convention of the Manitoba Beekeepers' Association will be held at the University of Manitoba, Winnipeg, during the last week in January. The exact dates are not available but they may be had by writing the Department of Entomology, Manitoba Agricultural College, Winnipeg.

On to Trenton for New Jersey Annual

All day, January 14 and January 15, at the Republican Club, 139 East Hanover Street, Trenton, N. J., the best of New Jersey bee folks will hold their big winter meeting. The program is a good one, and you are sure to go home from a "nice time by all."

"Wyoming Honey for Wyoming People"

This is the title of a four-page circular by Miss Luella Sherman, Nutrition Specialist of the Extension Service at Laramie. It is available for beekeepers who wish to distribute it to their customers. Write the Extension Service for a supply.

Bulletin on Honey in Radiators

A new and revised issue of mimeographed Bulletin R2, of the Extension Division, New York State College of Agriculture, "Honey and

Water as an Anti-freezing Mixture for Automobiles," by F. L. Fairbanks and R. B. Willson, is now available to anyone who will write for it. This bulletin points out clearly the possible dangers involved in the use of this solution and is not an unqualified recommendation by the College that it be tried.

Pennsylvania at Harrisburg, January 20-21

The State Association invites the wide-awakes of the honey fraternity to the annual meeting at the Public Library, Harrisburg, Jan. 20-21. There is a dandy good program with a number of well-known outside speakers.

California Short Courses, Final Dates

The Extension Division of the College of Agriculture, the beekeeping associations of California and the American Honey Producers' League are co-operatively offering a short course in beekeeping. These meetings are scheduled for Chico, January, 22-23, and Santa Anna, January 26-27. Among the speakers are three well-known men from a distance. James I. Hambleton, apiarist of the United States Department of Agriculture, will deliver three lectures on the various phases of beekeeping. Kennith Hawkins, of Wisconsin, will discuss "The Family Skeleton and the Honey Crop." Jay Smith, of Indiana, known over the world for his fine queens, will lecture about queen-rearing. There will also be a number of well-known California beekeepers on the program, speaking on the marketing of honey, the cost of honey production, migratory beekeeping, selling bees by the pound, and other important subjects.

The California State Beekeepers' Association is to meet in connection with both of the short course sessions. The complete program for these meetings may be obtained from G. H. Vansell, Secretary of the California State Beekeepers' Association, branch of the College of Agriculture, Davis, California.

Minnesota Farmers' Week

Management of bees for honey production, wintering of bees, bee diseases and marketing will be featured in the program which the bee division men of the University of Minnesota will present as their part of the program for the annual Farmers' and Homemakers' Week short course, to be held at University Farm, St. Paul, January 18-23, 1926. The vital question of marketing will be presented on Friday, January 22, Francis Jager, chief of the division, leading off with a statement of actual

conditions of honey markets in the northwest. These conditions are none too good, and speakers following Professor Jager will endeavor to outline some movement which will lead to improvement. Dr. H. B. Price, of the Minnesota College faculty, will speak on the "General Principles of Marketing Farm Products," and T. G. Stitts, extension specialist in farm economics, will suggest methods of correct marketing.

C. D. Blaker, of Minneapolis, State Bee Inspector, will assist the university faculty men in handling the subject of bee diseases. "The Actual Status and Spread of Bee Diseases in Minnesota" will be his general subject.

League Convention Dates

The annual convention of the American Honey Producers' League will be held in Cincinnati on Tuesday and Wednesday, February 2-3. Headquarters will be at the Metropole Hotel.

Indiana Short Course

A short course in beekeeping will be held at Purdue University, Lafayette, Indiana, February 15 to 18, 1926. Professor Davis writes that the program will be well worth the time of any beekeeper, although not fully completed when his letter was written. Among the speakers from outside the state, Mr. J. I. Hambleton, of Washington, D. C., and Frank C. Pellett, of this office, are expected to be present. Further information, programs, etc., can be secured from the Department of Entomology, Purdue University, Lafayette, Indiana.

Oregon at The Dalles, Jan. 18-19

The State Beekeepers' Association meeting at The Dalles, Jan. 18-19, promises to be the most successful and valuable which has so far been held.

The object in having this meeting at The Dalles is two-fold: first, to bring the industry to the attention of the fruit growers of this important fruit growing section, and, second, to make it possible for beekeepers from central Oregon to attend the meetings with less expense. It is on the Columbia Highway extending both east and west, and it is possible for a large attendance to come from both eastern and western Oregon by automobile. Mr. Hambleton of the United States Department of Agriculture and Mr. Kennith Hawkins of the G. B. Lewis Company, Watertown, Wisconsin, will be with us. It is also possible that other leading authorities from the east will be with us at this time. All the commercial producers and others interested in

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beekeeping should make a special effort to attend this conference, as important questions relative to legislation and disease will come up at this time.

H. A. Scullen, Secretary.

Ohio State Convention

The annual meeting of the Ohio Beekeepers' Association will be held at Columbus, Ohio State University, Feb. 3 and 5, 1926. Speakers at this convention will be Dr. E. F. Phillips of Cornell University, Dr. A. P. Sturtevant of the Bee Culture Laboratory, Washington, D. C., E. R. Root, Dr. Ernest Kohn, Dr. J. C. Hutzelman, Charles N. Poling, C. A. Reese, F. B. Moore, and other local beekeepers. Much interest has been manifested recently in the beekeeping work at Ohio State University, and Miss Florence Naile, Secretary of the association and also connected with the university, has consented to explain the situation. The annual banquet will be held on Thursday evening.

Greetings of the association will be extended to the International Apis Club through Doctor Phillips, President of the club, who will attend the General Conference in Great Britain next summer.

Aberdeen District Beekeepers' Banquet

Seventy enthusiastic beekeepers attended the first annual beekeepers' banquet at Aberdeen, S. D., Dec. 8, held in the Commercial Club dining hall.

The association was organized July 20, 1925, with the assistance of County Agent W. E. Dittmer, and has held four meetings since that time, with an average attendance of over sixty, with an increased membership on every occasion.

The association passed a resolution inviting the State Beekeepers' Association to hold their annual meeting at Aberdeen next year. They also urged more extension work in beekeeping in the state, and recommended that their President appoint a committee to work out a better foulbrood law. An interesting discussion followed and the meeting adjourned.

Ontario Short Course

On January 11 to January 22, 1926, we are holding our annual short course in apiculture. At this time we are planning to have a three days' course, January 20, 21 and 22, at which time the diseases of bees will be discussed from all angles, together with the treatment, so that any of our experienced beekeepers who would care to do apiary inspection work next season will have an

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opportunity of taking this course and writing an examination, so that the successful beekeepers can do apiary inspection work for us next season. We expect to have with us Dr. A. P. Sturtevant, and believe that our short course will prove very beneficial, not only to the inspectors but to all who attend. Any Ontario beekeeper can secure a program by writing the Apiculture Department, O. A. C., Guelph, Ontario.

F. Eric Millen, Sec'y.

Nebraskans Get Together Jan. 5-6

The Nebraska Honey Producers' Association will have their annual roundup at Lincoln, Jan. 5-6, at the Plant Industry Building, College Farm.

George S. Demuth, James I. Hambleton, Jay Smith and John G. Jessup are the ringleaders. Come, Nebraskans, show your stuff.

Washington State Meeting

The state meeting of the beekeepers of Washington is to be held at Olympia, January 15 and 16. The headquarters will be at the Olympian Hotel. This is one of the series of meetings in which Mr. J. I. Hambleton and Mr. Kennith Hawkins will appear.

Our Cover Pictures

December

It was a mistake to neglect mention of the December cover. We have had so many comments on the theme of it that it must have made an impression with many of our readers. The great story of the Christ is ever new at Christmas. The restful snow-covered apiary blended well with it.

This photograph was secured under difficulties for us by one of our enthusiastic subscribers, J. C. Gilham, of Schuylkill Haven, Pa. The snow came in April, and to have hives under snow at that time is unusual. Gilham stood out in the cold for hours in the middle of the night to get a good exposure. We are exceedingly grateful to him for such thoughtfulness. It is as unusual as the snow storm.

The inspiration for the blending of the photograph and the design was from our artist, Miss Louise Conradt, of Keokuk Iowa.

January

The sweet face of "Dorothy" gives grace to so sweet a subject as beekeeping. Many of us have little girls and we approve of "Dorothy." She is the daughter of L. C. Dadant. As I write this her mother has not seen the cover, but I do not think she will scold me, do you? We hope you will like the new covers.

Crop and Market Report

Compiled by M. G. Dadant.

For January crop and market report, we asked reporters to answer the following questions:

1. How is honey moving?
2. What proportion of the crop is sold?
3. How nearly are prices being maintained?

HONEY MOVEMENT

The usual slowing up of the honey market has occurred this year, according to reports coming in. Practically always the honey market drops preceding the holidays, to strengthen again thereafter. This year it has been no exception to the rule, as there has been an appreciable slowing up of demand for honey since Thanksgiving time.

Whether this is going to be followed by a marked quickening of the market after the holidays is yet to be seen. Observation of the fruit journals would lead one to believe that there has been also "a draggy condition" in the fruit market—that is, that fruits have not been moving as readily as they should considering the crop. This has probably been partly brought about by the fact that there has been a lot of inferior fruit thrown on the market on account of the earlier freezes damaging the fruit which had not yet been gathered.

Undoubtedly the slowness of the sugar market also has some effect upon all sweets, including fruits.

PROPORTION OF CROP MOVED

The New England states have cleaned up a large majority of their honey, most reporters claiming at least 75 per cent shipped out. New York, New Jersey and Pennsylvania are a good deal in the same state, as are also Ohio and Indiana.

The southeastern states, with the exception of possibly Kentucky and Louisiana, have also sold at least 75 per cent of their 1925 crop and will have no difficulty in disposing of the remainder.

Texas, of course, had a very short crop this year, and the local crop has already been disposed of and many sections are importing honey from outside to supply a rather steady but slow demand.

In central western states the condition is not quite as good, because there has been a very fair crop and this is distributed into the hands of a large number of producers, who are not active in marketing their honey.

The plains states are about in the same shape, although possibly they have disposed of a little more of their honey than in the central area.

In the inter-mountain territory it would appear that beekeepers are in excellent shape as to the amount of honey disposed of, although they have quite a number of cars yet to be sold. However, probably from 60 to 70 per cent of the honey is out of the hands of producers. Oregon and Washington are similarly situated, as is also Idaho.

In California the crop was similar to that of Texas—that is, small, and has been disposed of already and shipments are going into California to supply the demand, most of them coming in from the inter-mountain territory or from the Arizona-New Mexico district.

CONDITION OF HONEY PRICES

The appreciable stiffening of honey prices earlier in the season has been followed by a rather decided slump in prices not due especially to the slow movement of honey, but due most largely to the fact that the large number of small producers did not understand markets or marketing conditions, and have been ready to throw their supply on the market at "any old price." As a result, especially in the central western territory, five-pound pails are selling anywhere from 65 cents to $1.25.

If the price cutter only knew, he would soon realize that a low cut rate on honey, instead of moving a lot of honey, has exactly the opposite effect, and that is, it deters the buyer.

This is especially true where it is desired to sell honey through the usual trade channels.

No one cares to buy honey in quantity to repack and sell when price cutters run around offering honey as low as the lowest wholesale price and delivering right to one's door, packed in small packages.

Although there has been a lot of price cutting which has interfered very much with different local beekeepers who are desirous of maintaining a stable and uniform price, yet there is decidedly a boosting of local sales of honey, which in itself is desirable.

As stated in a former crop and market report, however, we do not see that beekeepers have made any great headway during the last five years towards solving the honey market. It is true that they are disposing of large quantities locally and more nearly taking care of retail trade through the grocers in small towns, etc., than at any time in the past as far as we can remember.

They have not, however, built up any marketing system which will take care of a record crop should one materialize in 1926. In fact, if a record crop comes on, we look for nothing better than the same old story of glutted market and reducing prices on honey, unless something specific is done.

Just how any cure will be brought about is a very difficult question to be answered, since any effort made should start with the producers themselves. Unfortunately they seem very apathetic and undesirous of making an effort in this direction.

This is not meant as a reflection at all upon the large number of honey producers who realize the desirability of creating and maintaining a stable market and who would be among the first to go into such a movement if properly launched. It is, however, aimed at a large number of other moderate sized producers who are willing to sell their honey at any cost and do not take into consideration the cost of production nor the labor involved. In fact, they count their labor as nothing and figure that if the honey sells at anything above cost of cans and material it is a profit to them.

One producer from California in writing stated that prospects looked favorable so far for a crop in California next year, but that he wondered already what would become of the honey if a big old-time crop was harvested. He deprecated the fact that no co-operative movement was in sight and that this honey would have to seek markets as best it could at whatever prices it could get.

These are not very rosy suggestions to bring out at the beginning of a new year, but they are questions which should agitate and concern the modern beekeeper who is dependent upon honey and honey prices for a livelihood.

Returning to the 1925 crop, there will be little difficulty, we believe, in disposing of the balance of the crop at the prices which have been ruling since September prices came into effect. There may be possibly some little lowering of the jobbing prices in carlots in some instances, but also a stiffening in others. The fact that over half of the crop is already sold, in fact probably two-thirds of it, would indicate that the balance should find market without a great deal of difficulty. What we should be concerned with now is the 1926 crop and its disposal.

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

As a measure of protection to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

Advertisements of used beekeeping equipment or of bees on combs must be accompanied by a guarantee that the material is free from disease or be accompanied either by a certificate of inspection from an authorized inspector or agreement made to furnish such certificate at the time of sale.

BEES AND QUEENS

TWO frames with brood and honey, two pounds bees and one untested queen, $5.00 f. o. b. here.
L. J. Bond, Big Bend, La.

FOR YEARS we have been shipping thousands of pounds of bees all over the United States and Canada. Booking orders now for spring shipping. Write for free circulars telling about a customer harvesting 43,000 pounds of honey from 100 colonies of bees this past season. Just think—430 lbs. average. Ault Bee Company,
Box 98, Weslaco, Texas

BOOKING ORDERS FOR 1926—Two frames well covered, two additional pounds, queen introduced and laying enroute to you, all for $5.00. Best package and best price in the South. Young Italian queen and bees and Hoffman frames, with health certificate attached. One-fifth down books order for May delivery. Send for December copy of Beekeepers' Item giving co-operative plan of certified advertising of members of Louisiana State Beekeepers' Association.
Jes Dalton, Bordelonville, La.

BRIGHT American Beauty Italian Bees and Queens—Equal to any strain. See ad. page——Tupelo Apiaries.
J. L. Morgan, Apalachicola, Fla.

QUALITY QUEENS—Now booking orders for 1926. Also a few package bees. Write for literature and prices.
Valley Bee & Honey Co., Weslaco, Tex.
(E. E. Salge & Bros., Props.)

FOR SALE—Italian bees and queens, 2-lb. packages of bees with queens, $3.50 each; 1-lb. package with queens, $2.50. Queens bred with the greatest of care.
O. P. Hendrix, West Point, Miss.

WILL TRADE package bees for white honey.
Van's Honey Farms, Hebron, Ind.

THREE-BAND Italian bees and queens—Now booking orders for 1926. Satisfied customers everywhere; ask your inspector, extension agent or provincial apiarist, they can tell you what our bees are and what our reputation is. We have a well established business and guarantee satisfaction. In Canada ask your experiment station about us. Write for circular and price list.
J. M. Cutts & Son,
R. No. 1, Montgomery, Ala.

THREE-BANDED Italian queens. Package bees. Untested queens, 1, $1.00; 6, $5.00; 12, $9.50. 100, $75.00. Tested queens, $1.50 each. Write for price list on package bees. Safe arrival, satisfaction guaranteed.
Taylor Apiaries, Lock Box, Luverne, Ala.

ITALIAN bees and queens as good as money can buy. Cypress bee hives; best and cheapest. Prices on request.
W. E. Buckner, Mt. Vernon, Ga.

NOTICE—Our 1926 circular price list is now ready for distribution. We now rear only 3-banded Italian queens. Our queens for 1926 will be reared only from record-breaker mothers. Our "Mrs. Manitoba Wright" has an authentic record unparalleled for the short season; 646½ lbs, with one increase, spring count. She made a scale record of 25 pounds in one day. M. C. Berry & Co.,
Box 697, Montgomery, Ala.

PACKAGES with queens introduced will save time and loss in both bees and queens. Our queens are of the best Italian stock and are introduced and ready for business upon arrival. Also queens alone. We never have had any disease in our yards. State inspected. Satisfaction guaranteed.
A. O. Smith, Mt. Vernon, Ind.

BEES, BEES, BEES—I have the bees and equipment, backed by fifteen years of beekeeping experience and selective breeding, to supply your wants with 3-banded Italians. Begin shipping April 10th. Two pound package, with queen, $4.00 each; six, $3.75 each; dozen or more, $3.50 each, f. o. b. shipping point. Select untested queens, $1.00 each; dozen, $10.00.
P. M. Williams, Ft. Deposit, Ala.

BEES and bee supplies, superior quality, lowest prices. No disease.
R. C. Schurtz, Stirling, Alta, Canada.

GOLDEN ITALIAN QUEENS and nuclei for 1926 (the kind that gets the honey). Price, untested, $1.00 each; six, $5.00; twelve, $10.00; $75.00 per 100. Two-frame nuclei with queen, $4.50 each. Safe arrival guaranteed.
E. F. Day, Honoraville, Ala.

ITALIAN Bees, Queens, Bee Supplies.
Soharev's Apiary, Slocum City, B. C.

1926 PACKAGE BEES — Pure Italians. Write for prices.
J. J. Scott, Crowville, La.

COMBLESS PACKAGE BEES shipped on sugar syrup. Pure Italian stock with queen. Two-pound packages, 1 to 10, $4.25; 3-lb. package, 1 to 10, $5.25. Write for prices on larger lots and nuclei. No disease, and safe arrival guaranteed; 20 per cent books orders. Reference furnished.
John A. Williams, Box 178, Oakdale, La.

SUPERIOR ITALIAN QUEENS AND BEES Get our prices on package bees for 1926 delivery. No disease; we guarantee bees and service to please in every detail or your money back.
W. C. Smith & Co., Calhoun, Ala.

SALIDA APIARIES for early Italian queens and package bees. Write for prices and order early. Salida Apiaries,
Salida, Stanislaus Co., Calif.

JAY SMITH strain Italian queens. Book early for spring delivery. Satisfaction guaranteed; $1.00 each.
J. C. Hester, Mansfield, La.

FOR SALE—Italian queens ready May 15. One queen, $1.00; 6 queens, $5.50; 12 queens, $10.00. W. W. Talley,
R. 4, Greenville, Ala.

I AM booking orders for May delivery on Caucasian and Italian 3-frame nuclei; also queens of either race. Yard inspected; no disease.
Peter Schaffhauser, Havelock, N. Car.

TEN YEARS of experience in breeding queens of quality Goldens, also gray Caucasians. Golden queens: one, $1.25; dozen, $11.50. Gray Caucasians, one, $1.50; dozen, $15.00. Pure mating. Safe arrival guaranteed in United States and Canada.
Tillery Bros., Rt. 5, Greenville, Ala.

SALIDA APIARIES are now booking orders for early spring delivery of our high-class Italian queens and bees. We use the best breeders obtainable and ship only the best thrifty queens. Prompt service, safe arrival in U. S. and Canada, and we guarantee to treat you square. Untested queens: 1, $1.25; 6, $7.00; 12, $13.00; 25, $1.00 each, and 100 at 90c each.
Salida Apiaries, T. L. Nicolaysen, Prop.,
Salida, Stanislaus Co., Calif.

GOLDEN THREE-BANDED and Carniolan queens. Tested, $1.00; untested, 75c each. Bees in 1-pound package, $1.50; 2 pounds, $2.50; 3 pounds, $3.25. Safe delivery guaranteed. C. B. Bankston,
Box 65, Buffalo, Leon Co., Texas.

SHE-SUITS-ME QUEENS—Untested three-banders, $1.00 each; 25 or more ordered in advance, 75c each. Safein cage with initial order. Allen Latham,
Norwichtown, Conn.

BRIGHT ITALIAN QUEENS—One, $1.00; 6 for $5.00 or 12 for $10.00. Write for prices on large orders or package bees.
P. B. Skinner, Greenville, Ala.

LEATHER COLORED ITALIAN QUEENS—$2.00; after June 1st, $1.00. Tested, $2.00. A. W. Yates
15 Chapman St., Hartford, Conn.

FOR SALE

FOR SALE—At once, my entire queen-rearing outfit, including 100 eight and ten-frame hives bees with one and two supers of honey; also a nice bunch of baby nuclei and one of the best ranges in the south. My reason for selling is eye trouble. R. O. Cox, Rutledge, Ala.

FOR SALE—In one of the garden spots of the world; no frost, always green, 400 colonies of bees in three locations. Seven-room frame house, out buildings. Stock valued at $2,000. Will sell part or all of above at sacrifice. Sickness cause of sale.
Penn G. Snyder, Aibonito, Porto Rico.

HONEY AND BEESWAX

FOR SALE—1,200 lbs. white clover honey in 2½-lb. cans and 5-lb. pails. Entire lot for 12½ cents per pound, f. o. b. Loraine, Ill. Write J. R. Whitney, Millville, Minn.

FOR SALE—Clover honey in new sixties. Five-case lots, 10c.
C. S. Watts, Monticello, Ill.

FOR SALE—Finest clover and amber honey.
A. S. Tedman, Weston, Mich.

FOR SALE—Choice fancy 1925 crop white clover extracted honey in new 60-lb. cans, 11c; amber, 10½c. Sample 10c. Also some comb honey. Write for large lot prices.
Edw. A. Winkler, Joliet, Ill.

HONEY in 5 and 60-lb. cans.
Van's Honey Farms, Hebron, Ind.

FOR SALE—Light amber clover honey.
Lewis Klaty, Carsonville, Mich.

FOR SALE—White and sweet clover honey, crystallized in 60-lb. cans. Write for prices. Martin Carsmoe, Ruthven, Iowa.

WILD RASPBERRY and fireweed honey, in new sixties. Exceptionally light and fine flavored. Sample 15c.
L. C. House, Stambaugh, Mich.

FOR SALE—Water white clover honey, finest in the world, in five-gallon cans, two to the case. Lots of 10 cases or more 10c a pound, and smaller lots 11c. Prices f. o. b. Gordon, Neb. M. C. Berry & Co.
Box 697, Montgomery, Ala.

COMB HONEY FOR SALE—Fancy white comb honey, $4.80 per case of 24 sections; No. 1, $4.25; No. 2, $3.75. Well cleaned and graded by the Root system. Will not have to be regraded. Well packed in carriers holding 6 or 8 cases. This honey gathered from alsike white and sweet clover. Will more than please your customers.
H. J. Walters, Burgoon, Ohio.

HONEY FOR SALE—If it's quality and prompt service you want, write for prices to O. H. Schmidt, Rt. No. 5, Bay City, Mich.

FOR SALE—Comb honey; also choice light amber extracted.
Mathilde Candler, Cassville, Wis

EXTRACTED BUCKWHEAT HONEY in 60-lb. cans, 10c per pound.
Walter Severson, Altamont, N. Y.

DELICIOUS Nevada alfalfa honey.
C. E. Andrews, Fallon, Nevada.

FOR SALE—New crop clover honey in 60-lb. cans.
Frank Janeschek, Middleville, Mich.

NEW CROP white clover honey in 60-lb. cans. Prices on request.
Sundberg Bros.,
Route 3, Fergus Falls, Minn.

STRICTLY white northern extracted honey in new 60-lb. cans, carload or case lots.
Geo. Seastream, R. 1, Moorhead, Minn.